

MONTHLY WEATHER REVIEW.

Editor: Prof. CLEVELAND ABBE. Assistant Editor: HERBERT C. HUNTER.

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No. 1.

The MONTHLY WEATHER REVIEW summarizes the current manuscript data received from about 3,500 land stations in the United States and about 1,250 ocean vessels; it also gives the general results of the study of daily weather maps based on telegrams or cablegrams from about 200 North American and 40 European, Asiatic, and oceanic stations.

The hearty interest shown by all observers and correspondents is gratefully recognized.

Acknowledgment is also made of the specific cooperation of the following chiefs of independent, local, or governmental services: R. F. Stupart, Esq., Director of the Meteorological Service of the Dominion of Canada; Señor Manuel E. Pastrana, Director of the Central Meteorological and Magnetic Observatory of Mexico; Camilo A. Gonzales, Director-General of Mexican Telegraphs; Capt. I. S. Kimball, General Superintendent of the United States Life-Saving Service; Commandant Francisco S. Chaves, Director of the Meteorological Service of the Azores, Ponta Delgada, St. Michaels, Azores; W. N. Shaw, Esq., Director Meteorological Office, London; Maxwell Hall, Esq., Govern-

ment Meteorologist, Kingston, Jamaica; Rev. L. Gangoiti, Director of the Meteorological Observatory of Belen College, Havana, Cuba; Luiz G. Carbonell, Director, Meteorological Service of Cuba, Havana, Cuba; Rev. José Algué, S. J., Director of the Weather Bureau, Manila Central Observatory, Philippines; Maj. Gen. M. A. Rykachev, Director of the Physical Central Observatory, St. Petersburg, Russia; Carl Ryder, Director, Danish Meteorological Institute, Copenhagen, Denmark.

As far as practicable the time of the seventy-fifth meridian is used in the text of the MONTHLY WEATHER REVIEW.

Barometric pressures, both at land stations and on ocean vessels, whether station pressures or sea-level pressures, are reduced, or assumed to be reduced, to standard gravity, as well as corrected for all instrumental peculiarities, so that they express pressure in the standard international system of measures, namely, by the height of an equivalent column of mercury at 32° Fahrenheit, under the standard force, i. e., apparent gravity at sea level and latitude 45°.

FORECASTS AND WARNINGS.

By Prof. E. B. GARRIOTT, in charge of Forecast Division.

IN GENERAL.

Winter barometric pressure was not maintained in the continental high areas. Over the interior of Asia the barometer was highest on the 4-5th and 15-16th, when it rose above 31.00 inches, and was low the 1st, 10th, 18th, and 28th. Accompanying periods of high pressure in the Asiatic area the barometer was low over Bering Sea, and closely following periods of low pressure over Asia the barometer rose above normal over Bering Sea and fell below normal over the Hawaiian Islands. These alternations in pressure had a relation to the order and succession of weather changes over the North American Continent. In the United States and Canada periods of cold, fair weather followed marked rises in pressure over Bering Sea, and depressions of the barometer over Bering Sea were closely followed over the North American Continent by periods of warm, rainy weather. Falls in the barometer over the Hawaiian Islands occurred about two days later than the rises over Bering Sea, and vice versa, depressions over Bering Sea were attended by high barometric pressure over the Hawaiian Islands. A similar association was shown between Atlantic and European pressures and weather changes. Over the Atlantic Ocean there was usually a reversal of barometric changes in northern as compared with southern latitudes, and at times when the pressure was high in the Iceland area the barometer ranged low over the middle and southern European continental area. From the 1st to 4th and 9th to 14th pressure was low over southwestern Europe and wintry weather prevailed over western and northwestern Europe.

Two severe storms occurred during the first decade of the month. The first of these advanced from British Columbia to the region of the White Sea from the 1st to 12th. This storm acquired marked intensity over the eastern portion of the United States on the 4th and 5th, and reached the British Isles on the 8th, with reported pressure below 29.00 inches. During the next two days the center of disturbance moved southeastward to the neighborhood of the Black Sea and, receding thence northward, disappeared in the direction of the

White Sea after the 11th. The storms that attended this depression from the 4th to the 9th, on land and sea, were very severe. The second storm of this decade was exceptionally severe over the eastern portion of the United States. It apparently advanced from the Pacific over lower California during the 2d and 3d. From the 4th to the 7th a barometric depression that was probably a continuation of this storm moved eastward, passing along the Gulf coast on the 6th, and reaching the south Atlantic coast the morning of the 7th. During the succeeding twenty-four hours the storm center moved northward, with pressure below 29.00 inches, and united over the St. Lawrence Valley with a depression that had moved eastward over British America. During the 7th and 8th heavy gales prevailed on the Atlantic coast and over the eastern Lake region. From the 9th to 12th this storm moved over the Atlantic north of the trans-Atlantic steamer tracks and disappeared beyond the region of observation north of the British Isles.

From the 9th to 13th a depression moved from the southern Rocky Mountain region northeastward over the lower Lakes and Canadian Maritime Provinces, attended by heavy rain in the south and east, by a severe storm of snow and sleet in parts of the Lake region, and by gales on the Gulf, western Cuban, and Atlantic coasts, and on the Great Lakes. During the next three days this depression moved northeastward over the Atlantic and disappeared in the direction of the Norwegian coast. From the 18th to the 22d a depression that may have been a continuation of the one just noted occupied northern European Russia.

From the 13th to the 17th a disturbance of moderate strength past from the north Pacific coast to Newfoundland. Following this disturbance the first cold wave of the month visited the country generally east of the Rocky Mountains, and carried the line of heavy frost into central Florida.

On the 19th the severest storm of the present season visited the north Pacific coast. At North Head and Tatoosh, Wash., wind velocities of 84 and 76 miles, respectively, were regis-

tered. The Oregonian, Portland, Oreg., of January 20, 1908, refers to storm warnings issued for this section as follows:

The season to date has been one of the stormiest on record, but the list of casualties so far is light. To the Weather Bureau this is largely due, as storm warnings have been sent out in advance of every storm. Shipowners and masters have been advised of the approach of heavy weather, and saving of life and property has been great.

This storm reached Lake Superior, with greatly diminished strength, on the morning of the 21st, and by the morning of 23d had past over Newfoundland. Moving northeastward the center of disturbance reached the vicinity of Iceland on the 25th, crossed the Scandinavian Peninsula during the 28th and 29th, and disappeared in the region of the White Sea after the 30th. From the 22d to the 25th a disturbance that apparently originated over the north-central portion of the West Indies moved northward off the Atlantic coast, with increasing intensity, attended by northerly gales and heavy snow in the Northeastern States. The Weather Bureau Observer, Mr. George E. Grimes, at Nantucket, Mass., has reported as follows regarding this storm:

This island was visited January 24 by the most severe storm in the history of the station. The storm began at 9:15 p. m., 23d, and continued until 3:41 a. m., 25th. The wind attained hurricane force at intervals from 2:37 a. m. to 4:46 p. m., of the 24th, and was accompanied by blinding snow. At 7:36 a. m., 24th, a maximum velocity of 83 miles an hour from the northeast was reached. The warnings were timely and no marine disasters have been reported in this vicinity. The greatest damage was to wharves and to fishing boats tied alongside, and was due mainly to the unusual high tide, that was 7.6 feet above mean low water. No lives were lost.

Following the passage of these depressions a cold wave swept the country east of the Rocky Mountains, carrying the line of freezing temperature to the middle and east Gulf coast and into the interior of central Florida. The following from Mr. A. H. Brown, manager of the Atwood Grapefruit Grove at Manavista, on the north bank of the Manatee River and opposite Manatee, Fla., to the Weather Bureau observer at Tampa indicates the value of the cold-wave and frost warnings and methods of protection employed in the citrus fruit districts of Florida. The Atwood Grove is one of the most valuable groves in the State, and its manager depends on the Weather Bureau predictions for action to protect his grove from freezes. The preparation for firing, and the materials used for protection at this grove cost, during the past year, upward of ten thousand dollars.

January 25, 1908.—We had a pretty close call last night. The temperature fell to 27° in our grove at 2 a. m., and as we had all arrangements made for firing we thought it time to get busy. We had forty men, and in forty minutes from the time we started firing the entire 200 acres were fired, with the result that we pushed the thermometer up to 37° in less than a half hour and held it there until daylight; and not a leaf was injured.

We depend greatly upon your reports and they mean a great deal to us, because we are prepared to fight the cold when it comes.

From the 23d to the close of the month four additional depressions of marked strength appeared over the North American Continent. The first of these advanced from the British Northwest Territory on the 24th, to the Great Lakes and thence northeastward to a position off the Scandinavian coast by the close of the month, with reported readings below 29.00 in the St. Lawrence Valley on the 27th. From the 23d to 31st a disturbance advanced from the Pacific Ocean to Newfoundland, crossing California on the 25th and 26th, reaching the south Atlantic coast on the 29th, and passing thence northeastward. From the 26th to 31st a depression moved from the British Northwest Territory to Newfoundland, and from the 28th to the 31st a storm that acquired marked strength moved from the north Pacific coast southeastward over the Rocky Mountain districts, and thence northeastward to northern Illinois by the close of the month.

The coldest periods of the present winter followed these disturbances. On the 29th the temperature was 42° below zero

in Manitoba, and the line of zero temperature was traced over central Illinois. On the 30th zero temperatures were reported in the interior of New York and New England, and a minimum of 28° below zero was registered at Canton, N. Y.

BOSTON FORECAST DISTRICT.*

[New England.]

The month was mild and precipitation was below the average. There was an unusual number of severe gales, and shipping was delayed, endangered, and in a few instances damaged. Storm warning displays were timely and doubtless resulted in a great saving of property and probably of human life. There were no storms without warnings.—*J. W. Smith, District Forecaster.*

NEW ORLEANS FORECAST DISTRICT.*

[Louisiana, Texas, Oklahoma, and Arkansas.]

The month was abnormally warm and precipitation was deficient. Warnings for freezing temperature and frost and for high winds on the coast were timely, and all were practically verified.—*I. M. Cline, District Forecaster.*

LOUISVILLE FORECAST DISTRICT.*

[Kentucky and Tennessee.]

As a whole the month was mild and unusually pleasant, and the cold periods were confined to the third decade. Precipitation was deficient and snowfall light. The cold-wave warnings of the latter portion of the month were of general and decided benefit.—*F. J. Walz, District Forecaster.*

CHICAGO FORECAST DISTRICT.*

[Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas, and Montana.]

The month was comparatively mild. There were two severe snow and wind storms during the second decade of the month. The severest storm occurred at the close of the month. The storms were followed by moderate cold waves. Timely warnings were issued in advance of the storms and it is thought that great benefit resulted.—*H. J. Cox, Professor and District Forecaster.*

DENVER FORECAST DISTRICT.*

[Wyoming, Colorado, Utah, New Mexico, and Arizona.]

The month was mild and dry. On the 16th, 29th, and 31st cold waves visited portions of the district. The usual warnings had been issued for the cold waves of the last two dates.—*F. H. Brandenburg, District Forecaster.*

SAN FRANCISCO FORECAST DISTRICT.†

[California and Nevada.]

Rainfall and temperature were nearly normal. Generous rains at the middle and close of the month afforded desired relief in the southern portion of California. The most important storm occurred on the 23d, and moderately high southerly winds were reported on the entire coast.—*A. G. McAdie, Professor and District Forecaster.*

PORTLAND, OREG., FORECAST DISTRICT.†

[Oregon, Washington, and Idaho.]

The first two decades of the month were stormy and unusually high winds occurred on the 5th and 19th. Timely warnings were issued for all storms. The month closed with a cold wave, for which warnings were issued.—*E. A. Beals, District Forecaster.*

RIVERS AND FLOODS.

The great rivers of the country maintained their usual early winter repose. While the month of January was far from being a cold one, there were no heavy warm rains to bring about a rapid melting of the comparatively small amount of snow

* Morning forecasts made at district center; night forecasts made at Washington, D. C.

† Morning and night forecasts made at district center.

over the watersheds. The only flood stages reached in the north were in the Illinois and Wabash rivers during the first six days of the month. They were caused by the moderate rains of the last ten days of December, 1907, and the crest stages were but a foot or two above the flood stage. Warnings were issued at the proper time.

There was a little more activity in the southern rivers, but no really high stages occurred. The greatest proportionate rises occurred in the rivers of the Carolinas from the heavy rains that fell from the 5th to the 12th, inclusive. The rise in the Pedee River had also been preceded by another more moderate one on the first day of the month. Warnings were issued promptly whenever necessary, and they were of great benefit to the cattle and lumber interests in the lowlands.

ICE.

At the end of December, 1907, the Mississippi River was frozen as far south as Prairie du Chien, Wis., and at the end of January, 1908, this was still practically the southern limit of solid ice, altho there had been some increase in its thickness. No floating ice was observed very far below the mouth of the Ohio River. The Missouri River at the end of the month was frozen over as far as the mouth of the James River, but only thinly in the neighborhood of Yankton, S. Dak. The cold wave of the 29th closed the river as far down as Sioux City, Iowa, where the closing caused a considerable rise in the river, and a forcing of the main channel to the Nebraska side of the river for the first time in three or four years. In the Ohio River floating ice was observed on various dates, but very little below the mouth of the Kentucky River. Nothing unusual occurred in the rivers of the North Atlantic system, and there was much less ice than during January, 1907. The Connecticut River at Hartford, Conn., remained open, altho at times it was full of heavy floating ice.

SNOW.

The following information has been condensed from the snow bulletins issued in the Western States, where the water supply for purposes of irrigation is dependent upon the amount of run-off from the melted snow:

Arizona.—Less snow than in December, 1907, and but little remaining on the ground at the end of January, 1908. In the valleys there was practically none.

Colorado.—The snowfall was less than usual, as a whole, altho there was a slight excess in the upper watersheds of the Gunnison, Grand, and Yampa rivers. Thruout the southern third of the State the snowfall to date has been very light, but over the remainder a normal fall during the re-

mainder of the season will insure an average flow of water on the western slope, and somewhat less in the Arkansas and South Platte rivers.

Idaho.—Some improvement in the snow situation in the northern portion of the State, but elsewhere the reverse. High temperatures interfered with the prospects and there are no present indications of an excess of water in any locality. In some a deficiency is likely.

Montana.—Snowfall deficient, and ground dry to an unusual depth. An average supply of water is not probable even if the snowfall during February and March should be heavy.

Nevada.—An average flow of water is now indicated. Altho this season's snow is deficient in quantity, there was considerable old snow near the summits of the mountains at the beginning of the season.

New Mexico.—Little snow during the month in the valleys, but a considerable increase in stored depth in the mountains. Prospects are favorable for a good water supply except over the Canadian watershed.

Utah.—The snowfall during the month was deficient, but there appears to be about an average amount on the ground.

Oregon.—The snowfall was much less than in 1907, and was also much less than the normal amount. However, the snow in the mountains is well drifted into the canyons, and is packed solidly, insuring a gradual melting during the spring months.

California.—The snowfall was not as heavy as it was in January, 1907, and only a moderate amount remained on the ground at the end of the month. Nevertheless it is well-packed at the higher elevations and there will probably be an ample supply of water.

Washington.—The snowfall was deficient, but compact owing to rains. Prospects are favorable for an ample water supply.

Wyoming.—Conditions on the whole are very favorable, except over the eastern slope of the Big Horn Mountains. Over nearly all sections of the State there is a good supply of well-packed snow.

The highest and lowest water, mean stage, and monthly range at 191 river stations are given in Table IV. Hydrographs for typical points on seven principal rivers are shown on Chart I. The stations selected for charting are Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississippi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport, on the Red.—H. C. Frankenfield, Professor of Meteorology.

SPECIAL ARTICLES, NOTES, AND EXTRACTS.

MR. FRANK RIDGWAY.

Mr. Frank Ridgway, Local Forecaster of the Weather Bureau, whose death from pneumonia occurred December 31, 1907, at Pittsburg, Pa., entered the Weather Service, then a branch of the Signal Corps of the Army, January 25, 1879, and with the exception of about eight months in 1884 served continuously until May, 1906, when he was given leave of absence without pay to enable him to accept the position of Director of Public Safety at Pittsburg, Pa., to which position he had been appointed by the mayor of that city.

Mr. Ridgway served at a large number of stations of the Bureau, and always with credit, but his principal, most important, and valuable service was while in charge of the station at Pittsburg from June, 1896, to May, 1906. His administration there was characterized by great efficiency, and he was several times commended for accuracy in river forecasting and for effective work in the distribution of warnings in connection with the frequent floods at that station.

Mr. Ridgway was a man of most genial and attractive per-

sonality, high character, and fine social attainments, and was widely known and respected in the city where he resided, and thruout the service generally.—H. E. W.

RECENT ADDITIONS TO THE WEATHER BUREAU LIBRARY.

H. H. KIMBALL, Librarian.

The following titles have been selected from among the books recently received, as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies. Most of them can be loaned for a limited time to officials and employees who make application for them. Anonymous publications are indicated by a —.

Bechtle, A.
Das Klima des Rieses und seiner Umgebung. Nördlingen. 1907. 49 p. 8°.

Berget, A.
Les courants marins. Le Gulf-Stream. Monaco. 1906. 19 p. 8°.
(Bull. Musée océanographique de Monaco. No. 73. 10 mai 1906.)
Utilité de l'étude des courants. Monaco. 1906. 18 p. 8°.
(Bull. Musée océanographique de Monaco. No. 77. 5 juin 1906.)

- Bulgaria.** Institut météorologique. Annuaire 1906. Sofia. 127 p. f°.
- Elwar, Edward.** West Indian hurricanes and other storms. [London. 1907.] 19 p. 8°.
- Eredia, Filippo.** Le precipitazioni acquee nella Riviera ligure. Roma. 1907. 8 p. 4°. (Estratto dalla Rivista agraria della 2 decade di ottobre 1907.)
- Holtermann, Carl.** Der Einfluss des Klimas auf den Bau der Pflanzengewebe. Leipzig. 1907. viii, 249 p. 4°.
- International meteorological conference, Innsbruck, 1905.** Rapport. Paris. 1907. x, 160 p. 8°.
- International seismological association, & Strassburg. K. Hauptstation für Erdbebenforschung.** Seismogramme des nordpazifischen und südamerikanischen Erdbebens am 16. August 1906. Strassburg. 1907. portf. of 140 pl. 32x44 cm.
- Begleitworte und Erläuterungen von E. Rudolph und E. Tams. Strassburg. 1907.
- Junack, —.** Die Dürre des Sommers 1904 in deutschen Walde. Neudamm. 1907. 32 p. 8°.
- Klein, Hermann J.** Allgemeine Witterungskunde. 2d ed. Wien. 1905. 247 p. 12°.
- Legendre, R.** Le teneur en acide carbonique de l'air marin. Monaco. 1906. 8 p. 8°. (Bull. Musée océanographique de Monaco. No. 84. 15 novembre 1906.)
- Mägis, A.** Beitrag zur Dynamik der Wirbelstürme. Solothurn. 1907. 56 p. 8°.
- Nipher, Francis E.** Theory of magnetic measurements, with an appendix on the method of least squares. New York. 1886. 94 p. 12°.
- Philippson, Alfred.** Das Mittelmeergebiet. Zweite Auflage. Leipzig. 1907. ix, 261 p. 8°.
- Russia. Central physical observatory.** Annales 1903. Supplément. Irkoutsk. 1906. ix, 107 p. f°.
- Société ouraliennne d'amateurs des sciences naturelles.** Bulletin. Ekaterinburg. 1907. 191 p. 8°.
- Stupart, R. F.** The climate of Yukon territory. (Reprint from Trans. Canadian institute, 1906-7. 7 p. 8°.)
- The calamitous typhoon at Hongkong, 18th September, 1906. Being a full account of the disaster. Hongkong. 1906. 20 p. 4°.
- RECENT PAPERS BEARING ON METEOROLOGY AND SEISMOLOGY.**
H. H. KIMBALL, Librarian.
- The subjoined titles have been selected from the contents of the periodicals and serials recently received in the Library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau. Unsigned articles are indicated by a —
- Bureau of standards. Bulletin. Washington. v. 4.**
Rosa, E. B., and Babcock, H. D. The variation of resistances with atmospheric humidity. p. 121-140.
- California physical geographic club. Bulletin. Oakland. Oct., 1907.**
Fairbanks, Harold W. The great earthquake rift of California. p. 2-8.
- McAdie, Alexander G.** Earthquake weather. p. 8-9.
- National geographic magazine. Washington. v. 19. Jan., 1908.**
Bigelow, Frank H. Studies on the rate of evaporation at Reno, Nev., and in the Salton sink. p. 20-28.
- Nature. London. v. 77.**
Zeeman, P. Seismographs and seismograms. (Jan. 16, 1908.) p. 246-247.
- Chree, Charles.** Atmospheric electricity and fog. (Feb. 13, 1908.) p. 343.
- Simpson, George C.** Auroral characteristics of clouds. (Feb. 13, 1908.) p. 344. [Note on observations of aurora-like clouds within the tropics.]
- G., E.** The winds of northern India. (Feb. 13, 1908.) p. 353-355. [Review of memoir by Elliot.]
- B., G. H.** Theory of the mirage. (Feb. 13, 1908.) p. 356. [Describes recent experimental investigations in Italy.]
- Royal society. Proceedings. London. Ser. A. v. 80.**
Ohree, C. Magnetic declination at Kew Observatory, 1890-1900. p. 113. [Abstract.]
- Royal society. Proceedings. London. Ser. B. v. 80.**
Hill, Leonard. The influence of increased barometric pressure on man. No. 4: The relation of age and body weight to decompression effects. p. 12-24.
- Science. New York. New series. v. 27. 1908.**
Rotch, A. Lawrence. The balloons-sondes at St. Louis. (Feb. 21, 1908.) p. 315. [Note on observations in the autumn of 1907.]
- Scientific American. New York. v. 98. Feb. 15, 1908.**
Wade, Herbert T. Magnetic survey on the Pacific ocean. p. 112-113. *Scientific American supplement. New York. v. 65. Feb. 22, 1908.*
- Bryant, F. H.** Amount of air needed for ventilation. p. 119.
- Scottish meteorological society. Journal. Edinburgh. 3d ser. no. 22.**
Halm, J. On the relations between the diurnal changes of temperature and atmospheric pressure. p. 191-214.
- Aérophile. Paris. 16 année. jan. 1908.**
La Vaulx, Henry de. Sur les hauteurs réelles atteintes par les ballons-sondes et la valeur des observations thermométriques ainsi constatées. p. 26-27.
- Ciel et terre. Bruxelles. 28 année. 1908.**
Vanderlinden, E. Les foudrolements d'arbres en Belgique. p. 519-530, 553-561. (16 jan., 1 fév., 1908.) [Abstract.]
- Lancaster, A.** Le froid du commencement de 1908. p. 551. (16 jan., 1908.)
- Verres colorés pour l'observation des nuages. p. 552. (16 jan., 1908.)
- Revue néphologique. Mons.**
Heller, R. Un nouvel enregistreur d'orages. (Nov., 1907.) p. 180-182.
- Mémery, Henri.** L'état nuageux de l'atmosphère et l'aspect des taches solaires. (Nov., 1907.) p. 182-183.
- Mouvements des nuages dans les régions arctiques. (Nov., 1907.) p. 184-185. [Abstract of "Fram" observations.]
- Bracke, A.** Sur une cause de fortes pluies locales. (Nov., 1907.) p. 185-186. [Advances a theory to explain why certain localities are specially subject to heavy rainfall.]
- B[racke], A.** Phénomènes accidentels au Brunswick. (Déc., 1907.) p. 186-188.
- Fréquence des formes nuageuses à Batavia (1903-1905). p. 189.
- La répartition des orages dans l'Hérault. p. 190-192.
- Société belge d'astronomie. Bulletin. Bruxelles. 12 année. Dec., 1907.**
Arctowski, H. De l'influence de la lune sur la vitesse du vent aux sommets du Sántis, du Sonnblick et du Pike's Peak. p. 388-398.
- Agamenon, G.** Théorie des tremblements de terre. p. 398-409.
- Société belge d'astronomie. Bulletin. Bruxelles. 13 année. Jan., 1908.**
L., E. Tremblements de terre et phénomènes météorologiques. p. 44-45. [Note on rain following earthquakes in Chili.]
- Annalen der Hydrographie und maritimen Meteorologie. Berlin. 36 Jahrgang. 1908.**
— Ein interessanter Fall der Einwirkung des Blitzes auf den Schiffsmagnetismus und den Kompass. p. 34-36.
- Aus dem Archiv der Deutschen Seewarte. Hamburg. 1907. 30. Jahrg. No. 2.**
Schneider, J. Ueber den Einfluss des Mondes auf die Windkomponenten zu Hamburg. 10 p.
- Beiträge zur Physik der freien Atmosphäre. Strassburg. 2 Band. 1907.**
Ritter, Friedrich. Örtliches Windminimum, unterer und oberer Wind. p. 125-134.
- Arendt, Theodor.** Untersuchung des veränderlichen Charakters der Wasserdampflinien im Sonnenspektrum mit besonderer Berücksichtigung der meteorologischen Verhältnisse der Atmosphäre. p. 135-176.
- Knoche, Walter.** Zum Wärmegehalt der Atmosphäre. p. 177-182.
- Deutsche physikalische Gesellschaft. Bericht. Braunschweig. Jahrgang 5. 1907.**
Wiedemann, E. Zur Geschichte des Kompasses bei den Arabern. p. 764-773.
- Geographische Zeitschrift. Leipzig. 13 Jahrgang. 1907.**
Schubert, J. Landsee und Wald als klimatische Faktoren. p. 688-694.
- Illustrierte aeronautische Mitteilungen. Strassburg. 11. Jahrgang. Dez. 1907.**
Quervain, A. de. Die Technik der Pilotballonaufstiege. p. 492-498.
- Illustrierte aeronautische Mitteilungen. Strassburg. 12 Jahrgang. Jan. 1908.**
Bamler, K. Wissenschaftliche Ballonfahrten und Wetterprognose. p. 29-33.
- Bassus, K. v.** Ueber die Abbildung von Gewässern in Wolkendecken. p. 33-35.
- Meteorologische Zeitschrift. Braunschweig. Band 25. Jan., 1908.**
Trabert, Wilhelm. Die langdauernde Föhnperiode im Oktober 1907 und die Luftdruckverteilung bei Föhn. p. 1-9.
- Gockel, A.** Ueber den Ionengehalt der Atmosphäre. p. 9-19.
- Richarz, F.** Ueber Beobachtung des künstlichen Brockengespenstes. p. 19-25.
- Ueber die Mondperiode der Bewölkung, von J. R. Sutton, M. A. p. 27-28.

- Hann, J[ulius].** Einige Ergebnisse der meteorologischen Beobachtungen an den südindischen Höhenstationen. p. 28-31.
- Brückner, Ed.** Niederschlag, Abfluss und Verdunstung auf den Landflächen der Erde. p. 32-35.
- Siegel, Franz.** Resultate der meteorologischen Beobachtungen im Jahre 1906 am Observatorium erster Ordnung zu Curityba (Staat Paraná). p. 36-38.
- Nadler, —.** Feststellung und Untersuchung der oberen Inversion durch Pilotballons. p. 40-41.
- Hagelsturm im Ägypten. p. 41-42.
- Hann, J[ulius].** Westman über Dauer und Betrag der Sonnenstrahlung zu Stockholm. p. 42. [Abstract.]
- Nichols, E. F.** Ueber das Fehlen sehr grosser Wellenlängen im Sonnenspektrum. p. 43-44.
- Weltall, Berlin.** 8. Jahrgang. 1908. Jan. 15.
- Krebs, Wilhelm.** Sonnentätigkeit im July 1907, in Beziehung zu strahliger Wolkenbildung und zu Niederschlagsverhältnissen. p. 122-126.
- Wetter, Berlin.** 24. Jahrgang. 1907. Dez. 1.
- Lindemann, —.** Mittlere, grösste und kleinste Monats- und Jahressummen des Niederschlages: 1866-1905 [1 e., in Saxony]. p. 265-272.
- Sadewasser, —.** Ueber periodische Schwankungen der Windrichtungen. p. 272-279.
- Meissner, Otto.** Zur Berechnung des Tagesmittels der Temperatur aus den beiden Extremen. p. 282-286.
- Diesner, P.** Die Wärme des Oktober 1907. p. 286-287.
- Zeitschrift für Instrumentenkunde, Berlin.** 27. Jahrgang. Dez. 1907.
- Süring, R.** Die Feuchtigkeitsmessung bei Registrierballoonaufstiegen. p. 378-380. [Abstract of paper by Kleinschmidt.]
- Zeitschrift für Instrumentenkunde, Berlin.** 28. Jahrgang. Jan., 1908.
- Schreiber, A.** Genauigkeitsversuche mit einem Bohneschen an-eroid. p. 22-24. [Abstract.]
- Hemel en dampkring, Den Haag.** 5. Jahrgang. Jan., 1908.
- Een bezoek aan het Vlieger-Station te Hamburg. p. 133-134.

THE WEATHER OF THE MONTH.

By Mr. P. C. DAY, Assistant Chief, Division of Meteorological Records.

PRESSURE.

The distribution of mean atmospheric pressure for January, 1908, over the United States and Canada, is graphically shown on Chart VI, and the average values and departures from the normal are shown for each station in Tables I and III.

The pressure during January, as in the preceding month, was comparatively high over the southwestern portion of the United States, and diminished by rather steep gradients northward into Canada, and by gradients less pronounced eastward toward the Atlantic.

The region of highest pressure, 30.20 to 30.25 inches, embraced the central portion of the middle Plateau region, while the lowest pressure, about 29.80, prevailed over the Canadian Maritime Provinces.

The average pressure was above the normal over nearly the entire Rocky Mountain and Plateau districts, and below the normal from the Missouri and Mississippi valleys eastward to the Atlantic coast, and also by small amounts on the immediate Pacific coast.

The diminution of pressure northward and eastward as in the preceding month gave a preponderance of southerly surface winds with their modifying influence over the greater part of the United States and all southern districts of Canada.

A comparison of Chart VI, sea-level pressure, for the current month with that for January, 1907, together with temperature data for the two months, shows the marked influence upon the weather of any displacement of the more or less permanent areas of high and low pressure.

During January, 1907, high pressure prevailed north of the United States, the general drift of the surface winds over the northern portions of the United States was from the interior cold regions of British America, and the month was one of severe cold with frequent and heavy snowfall along the entire northern border, being especially severe in the States from Montana to the Great Lakes.

During the current month, reverse conditions prevailed, high pressure developed over the central Plateau region, pressure over the Canadian districts was comparatively low, the surface drift along the northern border was from southerly regions and the month was one of unusual warmth.

TEMPERATURE.

January, 1908, like the preceding month, was characterized by unusual warmth over practically all portions of the United States. Warm weather was almost continuous until near the end of the month, when a cold wave of considerable severity overspread the more northern district.

The temperature averaged unusually high over the Great Plains from Texas northward into Canada, ranging from about 5° above the normal in the first named district to from 15° to 20° above over the upper Missouri and Red River of the North valleys, and the northwestern provinces of Canada.

Over the Atlantic and Pacific coast districts the departures were not so marked, ranging from 1° to 3° above the normal.

Over a narrow strip embracing eastern Alabama and western Georgia and the Appalachian Mountain districts, as far north as Maryland, there was a slight deficiency.

A rather singular coincidence in connection with the above is that in the preceding month the only portion of the United States showing temperatures below normal was embraced within practically the same narrow limits as that shown for January.

Maximum temperatures ranged from slightly above 80° in the southern portions of Florida, Texas, and California, to slightly less than 50° over New England, the Lake region, and the elevated mountain districts.

Despite the unusual warmth over the northern districts, a few periods of rather cold weather were experienced in the more southern districts, the line of freezing temperature, with accompanying frost, extending to central Florida, nearly to the coast line of Texas from Galveston to the Rio Grande, and to exposed points in southern Arizona and California.

Minimum temperatures from 15° to 25° below zero were recorded in the Rocky Mountain region from central Colorado northward, over the upper Missouri Valley and New England; while over the northern portions of North Dakota, Minnesota, Wisconsin, and Michigan minimum temperatures from -30° to -40° were recorded.

PRECIPITATION.

The distribution of precipitation during January, 1908, is graphically shown on Chart IV by appropriate shading or by figures representing the actual amount of fall over districts the topography of which is too varied to admit of approximately correct shading.

The month as a whole was one of deficient rainfall. Over a small area embracing the Appalachian Mountain region from Maryland southward to the central Gulf coast, and the greater part of California, there was an excess of precipitation ranging from 1 to 4 inches, but over the remaining districts of the United States there was a general deficiency.

Over the extreme southern portion of Florida, eastern North Carolina, central New England, portions of the Lake region, the Ohio and middle Mississippi valleys, Louisiana and eastern Texas, western Oregon and the Puget Sound district of Washington, the deficiency ranged from 1 to 2 inches.

The general lack of precipitation and the wide extent of territory covered by excess of temperature occurring in conjunction are conditions that may well be classed as unusual for a midwinter month in the United States.

SNOWFALL.

The distribution of the monthly amounts of snowfall is graphically shown on Chart VII, and the depth on ground at end of the month on Chart VIII.

In general there was about the usual depth of fall over the Appalachian Mountain region, New England, and the lower Lakes, but there was much less than the average over the upper Lakes, especially over northern Michigan, where the fall was scarcely one-half the usual depth.

The snowfall over the Ohio and Mississippi valleys, the Great Plains region, and the lower levels of the Plateau and Pacific coast districts was generally less than the average. Over most of the mountain districts there was a general deficiency of snowfall, which, with the prevailing weather, prevented any material increase in the depths accumulated at the end of December.

HUMIDITY AND SUNSHINE.

In the districts from the Rocky Mountains eastward to the Atlantic, the relative humidity ranged generally from 5 to 10 per cent less than the average. West of the mountains there was a fairly well pronounced excess of from 5 to 15 per cent.

Over the Great Plains and the eastern slope of the Rocky Mountains, western Florida and the southern portion of Arizona and California the amount of sunshine was generally well above the average.

Cloudy weather was general over California, especially in the Great Valley of that State, where the amount of sunshine was less than 30 per cent of the possible; there was also a general excess of cloudy weather over portions of the central and east Gulf States. As a whole the month was unusually favorable for the successful pursuit of all outdoor occupations.

WEATHER IN ALASKA.

Over the southeast coast, or Sitka district, the temperatures were moderate, the lowest ranging from 22° at Sitka to 10° at Skagway. Along the southern coast, including the Alaska Peninsula, the minimum temperatures ranged from 9° at Kadiak to -5° at Fort Liscum. In the Copper River Plateau and upper Yukon districts, they ranged from -45° at Copper Center to -60° at Fort Gibbon. The coldest periods occurred from the 1st to the 6th, and again about the 20th.

Snow was comparatively heavy over the southern coast district, Fort Liscum reporting 165 inches fall for the month. Over the interior districts the snowfall ranged from 4 to 10 inches and the depth on the ground at the end of the month varied from 10 to 25 inches.

But little snow occurred over the southeastern coast district, and the ground was bare at the end of the month.

Average temperatures and departures from the normal.

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since January 1.	Average departures since January 1.
New England	12	27.0	+ 2.3		
Middle Atlantic	16	33.1	+ 1.3		
South Atlantic	10	45.2	+ 0.6		
Florida Peninsula *	8	59.6	+ 1.0		
East Gulf	11	47.2	- 0.1		
West Gulf	10	49.0	+ 3.5		
Ohio Valley and Tennessee	13	34.3	+ 0.8		
Lower Lake	10	25.4	+ 1.4		
Upper Lake	12	22.0	+ 4.0		
North Dakota *	9	18.6	+ 11.8		
Upper Mississippi Valley	15	26.9	+ 5.3		
Missouri Valley	12	30.0	+ 8.9		
Northern Slope	9	25.8	+ 6.8		
Middle Slope	6	36.2	+ 7.1		
Southern Slope *	7	44.3	+ 4.4		
Southern Plateau *	12	41.2	+ 2.8		
Middle Plateau *	10	27.5	+ 2.8		
Northern Plateau *	12	30.3	+ 3.0		
North Pacific	7	42.0	+ 2.5		
Middle Pacific	8	48.8	+ 1.7		
South Pacific	4	53.4	+ 2.5		

* Regular Weather Bureau and selected cooperative stations.

In Canada.—Director R. F. Stupart says:

The mean temperature of the month was higher than the average in all parts of Canada, exclusive of some of the eastern counties of Ontario, where there was a negative departure of from 1° to 3°. Near the coast in British Columbia the positive departure was from 1° to 3°, and eastward this increased to from 12° to 15° in Alberta, which differences also obtained in Saskatchewan and Manitoba. From the eastern boundary of Manitoba the positive departure from the average gradually diminished to an excess of only 3° near Lake Huron, and in southwestern Ontario the excess was between 1° and 3°. Over most of Quebec the positive departure was between 1° and 4°, and in the Maritime Provinces between 3° and 5°.

Average precipitation and departures from the normal.

Districts.	Number of stations.	Average.		Departure.	
		Current month.	Percent-age of normal.	Current month.	Accumulated since Jan. 1.
		Inches.		Inches.	Inches.
New England	12	2.89	83	-0.6	
Middle Atlantic	16	3.17	97	-0.1	
South Atlantic	10	4.20	108	+0.3	
Florida Peninsula *	8	2.77	93	-0.2	
East Gulf	11	5.34	106	+0.3	
West Gulf	10	1.89	63	-1.1	
Ohio Valley and Tennessee	13	2.57	66	-1.3	
Lower Lake	10	2.37	77	-0.7	
Upper Lake	12	1.49	75	-0.5	
North Dakota *	9	0.12	21	-0.4	
Upper Mississippi Valley	15	0.96	55	-0.8	
Missouri Valley	12	0.47	48	-0.5	
Northern Slope	9	0.87	64	-0.3	
Middle Slope	6	0.36	55	-0.3	
Southern Slope *	7	0.74	79	-0.2	
Southern Plateau *	12	0.93	90	-0.1	
Middle Plateau *	10	0.84	81	-0.2	
Northern Plateau *	12	0.79	47	-0.9	
North Pacific	7	5.45	82	-1.2	
Middle Pacific	8	5.13	111	+0.5	
South Pacific	4	4.08	147	+1.3	

* Regular Weather Bureau and selected cooperative stations.

In Canada.—Director Stupart says:

The precipitation was somewhat in excess of the average in Quebec and the Maritime Provinces, and deficient in other parts of the Dominion. In British Columbia the deficiency was small; in the Western Provinces it was approximately equal to about half the average amount.

At the close of the month the Western Provinces had a covering of snow of from 2 to 5 inches, while in Ontario and Quebec there was from 6 to 30 inches of snow on the ground. In the Maritime Provinces the ground was bare in the eastern districts, and was covered to a depth of from 6 to 8 inches elsewhere.

Average cloudiness and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England	5.3	- 0.5	Missouri Valley	4.1	- 1.1
Middle Atlantic	5.3	- 0.3	Northern Slope	4.4	- 0.2
South Atlantic	5.0	- 0.3	Middle Slope	3.4	- 0.4
Florida Peninsula	4.1	- 0.6	Southern Slope	4.3	+ 0.5
East Gulf	5.6	0.0	Southern Plateau	3.6	+ 0.7
West Gulf	4.9	- 0.5	Middle Plateau	5.4	+ 0.6
Ohio Valley and Tennessee	5.9	- 0.5	Northern Plateau	6.6	- 0.7
Lower Lake	6.8	- 0.7	North Pacific	7.1	0.0
Upper Lake	6.0	- 0.8	Middle Pacific	6.8	+ 1.7
North Dakota	6.0	+ 1.3	South Pacific	5.6	+ 1.5
Upper Mississippi Valley	4.9	- 0.4			

Average relative humidity and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England	70	- 6	Missouri Valley	67	- 8
Middle Atlantic	72	- 4	Northern Slope	69	- 1
South Atlantic	76	- 1	Middle Slope	59	- 8
Florida Peninsula	80	- 1	Southern Slope	62	- 4
East Gulf	73	- 5	Southern Plateau	56	+ 6
West Gulf	69	- 7	Middle Plateau	74	+ 4
Ohio Valley and Tennessee	72	- 5	Northern Plateau	78	+ 2
Lower Lake	77	- 4	North Pacific	86	+ 1
Upper Lake	78	- 5	Middle Pacific	84	+ 3
North Dakota	79	- 1	South Pacific	72	0
Upper Mississippi Valley	75	- 3			

CLIMATOLOGICAL SUMMARY.

By Mr. JAMES BERRY, Chief of the Climatological Division.

TEMPERATURE AND PRECIPITATION BY SECTIONS, JANUARY, 1908.

In the following table are given, for the various sections of the Climatological Service of the Weather Bureau, the average temperature and rainfall, the stations reporting the highest and lowest temperatures with dates of occurrence, the stations reporting greatest and least monthly precipitation, and other data, as indicated by the several headings.

The mean temperatures for each section, the highest and

lowest temperatures, the average precipitation, and the greatest and least monthly amounts are found by using all trustworthy records available.

The mean departures from normal temperature and precipitation are based only on records from stations that have ten or more years of observation. Of course the number of such records is smaller than the total number of stations.

Section.	Temperature—in degrees Fahrenheit.							Precipitation—in inches and hundredths.						
	Section average.	Departure from the normal.	Monthly extremes.				Section average.	Departure from the normal.	Greatest monthly.		Least monthly.			
			Station.	Highest.	Date.	Station.			Lowest.	Date.	Station.	Amount.	Station.	Amount.
Alabama	44.4	+ 0.2	Evergreen	78	5	Valley Head	10	24	4.28	- 0.36	Mobile	9.33	Thomasville	2.19
Arizona	47.6	+ 2.2	Vail	89	22	Grand Canyon	0	6	0.77	- 0.36	Kingman	2.32	Yuma (a)	0.10
Arkansas	41.7	+ 1.7	Ozark	78	2	Bergman	6	16	3.75	- 0.32	Stuttgart	5.92	Eldorado	1.82
California	46.7	+ 1.9	El Cajon	87	10, 11	Truckee	- 1	3	4.63	- 0.03	Lytle Creek	16.68	Bagdad	0.00
Colorado	24.4	+ 1.9	Holly	70	16	Gunnison	-34	8	0.52	- 0.10	Corona	3.60	Akron	0.00
Florida	57.4	- 0.8	3 stations	85	2, 5	Fenholloway	21	16	3.29	+ 0.27	Molino	7.40	Key West	0.63
Georgia	44.8	+ 0.3	St. Marys	79	2	Newnan	11	4	4.55	+ 0.70	Lumpkin	9.27	Tallapoosa	2.27
Hawaii	67.8		Kihel, Maui	86	3-5	Huamala, Hawaii	30	10, 31	2.95		Hakalau (Mauka)	23.68	2 stations	0.00
Idaho	26.6	+ 1.3	Garnet	63	30	Center	-36	31	1.07	- 0.80	Burke	5.27	Buhl	0.10
Illinois	29.7	+ 3.3	Chester, Mt. Vernon	62	21	Antioch	-12	30	1.42	- 0.97	Cobden	3.86	Martinsville	0.20
Indiana	30.8	+ 3.1	Bloomington	60	20	Winnebago	-12	29			Princeton	2.58	Salamonia	0.81
Iowa	24.9	+ 5.7	Logan	60	6	Laporte	-5	31	1.63	- 1.26	Fort Madison	1.50	Leon	0.06
Kansas	35.5	+ 5.9	Ashland	73	25	Estherville	-18	29	0.44	- 0.56	Columbus	1.73	3 stations	0.00
Kentucky	35.0	+ 0.6	Greensburg	62	21	Forest City	-18	29	0.21	- 0.53	Middlesboro	3.99	Shelbyville	1.22
Louisiana	50.5	+ 0.1	Reserve	85	8	Coolidge	-7	31	2.20	- 1.84	Lawrence	5.86	Robeline	0.63
Maryland and Delaware	32.8	+ 0.9	St. Francisville	85	5	Robeline	17	17	3.80	- 0.55	Salisbury, Md.	4.93	Darlington, Md.	2.11
Michigan	22.6	+ 1.7	Cheltenham, Md.	63	12	Oakland, Md.	-21	10	3.24	+ 0.12	Harrisville	3.32	Powers	0.40
Minnesota	16.4	+ 6.8	Millsboro, Del.	63	22	Ewing, Humboldt	-41	30	1.63	- 0.48	Redwood Falls	1.15	International Falls	0.02
Mississippi	45.7	- 0.6	Cheboygan	59	2	Bagley	-46	29	0.31	- 0.40	Fayette	8.94	Greenwood	2.43
Missouri	34.4	+ 3.4	New Ulm	63	16	University	13	27	4.75	- 0.24	Marble Hill	4.30	Albany	0.00
Montana	26.0	+ 6.5	Laurel	79	4	Unionville	-10	30	1.51	- 0.06	Troy	3.10	2 stations	T.
Nebraska	30.2	+ 6.4	Steffenville	68	22	Pleasant Valley	-46	31	0.61	- 0.25	Hastings	0.65	2 stations	0.00
Nevada	32.5	+ 3.5	Canyon Ferry	66	6	Kimball	-13	31	0.20	- 0.29	Palmetto	3.40	Las Vegas	0.18
New England*	24.7	+ 2.8	Lynch	70	20	Scottsbluff	-13	22	0.97	- 0.35	New London, Conn.	4.96	Williamstown, Mass.	0.95
New Jersey	31.8	+ 1.7	Las Vegas	75	16	Bloomfield, Vt.	-26	31	2.94	- 0.76	Toms River	5.22	Layton	2.29
New Mexico	35.2	+ 1.1	Houlton, Me.	62	23	Layton	-6	31	3.74	+ 0.21	Taos	2.11	4 stations	0.00
New York	23.1	+ 1.2	3 stations	60	12, 21	Rociada	-21	16	0.52	- 0.04	Keepewa	4.93	Lyndonville	0.72
North Carolina	39.3	- 0.3	3 stations	72	9, 23	Keepewa	-37	31	2.48	- 0.41	Banners Elk	8.65	Mount Airy	2.57
North Dakota	17.0	+ 8.7	Southern Pines	57	21, 22	Keepewa	-37	31	2.48	- 0.41	Beach	1.25	Langdon	0.00
Ohio	29.1	+ 1.3	Chilcot	70	7	Banners Elk	2	10	4.44	+ 0.50	Toledo	2.80	2 stations	1.07
Oklahoma	41.8	+ 4.2	Ironton	59	20	Walhalla	-41	29	0.18	- 0.23	Idabel	3.53	Mutual	0.00
Oregon	37.7	+ 2.6	Mangum	85	10	Rome	-8	31	1.82	- 0.87	Glenora	16.24	Silver Lake	0.00
Pennsylvania	28.4	+ 1.1	Umatilla	71	5	Mutual	-10	31	1.35	+ 0.06	Somersett	5.33	Selinsgrove	1.46
Porto Rico	73.4		Coatesville	59	21	Bend	-18	31	3.60	- 1.82	Canovanas	12.83	San German	0.88
South Carolina	44.2	+ 0.3	Guanica Centrale	94	4	Wellsboro	-18	31	2.68	- 0.54	Clemson College	7.53	Charleston	2.49
South Dakota	23.8	+ 8.4	Walhalla	76	23	3 stations	17	24, 25	4.86	+ 1.33	Selby	0.85	Kimball	0.02
Tennessee	38.1	+ 0.4	Chamberlain	66	19	Frederick	-28	29	0.28	- 0.28	Erasmus	5.48	Dyersburg	1.70
Texas	49.8	+ 2.3	Forestburg	66	24	Erasmus	4	24	3.48	- 0.87	Rockland	3.86	2 stations	0.00
Utah	27.8	+ 1.7	Pinewood	72	26	Hereford	0	18	1.06	- 1.15	Enterprise (near)	2.53	2 stations	0.10
Virginia	34.8	- 0.4	Falfurrias	95	25	Woodruff	-22	31	0.79	- 0.34	Callaville	7.07	Cape Henry	2.31
Washington	35.4	+ 2.5	Milford	80	9	Burkes Garden	-20	30	3.82	+ 0.78	Forks	21.95	Kiona	0.30
West Virginia	31.0	- 0.9	Charlottesville	69	22	Cusick	-21	31	4.22	- 0.70	Pickens	8.19	New Cumberland	0.56
Wisconsin	20.5	+ 5.4	Trinidad	65	10	Parsons	-16	10	2.92	- 0.66	Milwaukee	3.24	Dodgeville	0.20
Wyoming	21.5	+ 0.4	Sutton	62	21	Philippi	-16	10	0.88	- 0.42	Snake River, Y. N. P.	3.66	Kirtley	0.00
			Pine Bluff	65	19	Long Lake	-39	30	0.47	- 0.28				
			Soldiers Home	65	9	Norris, Y. N. Park	-41	31						

* Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut.

† 50 stations, with an average elevation of 671 feet.

‡ 142 stations.

DESCRIPTION OF TABLES AND CHARTS.

By Mr. P. C. DAY, Assistant Chief, Division of Meteorological Records.

Table I gives the data ordinarily needed for climatological studies for about 158 Weather Bureau stations making simultaneous observations at 8 a. m. and 8 p. m., seventy-fifth meridian time daily, and for about 41 others making only one observation. The altitudes of the instruments above ground are also given.

Table II gives a record of precipitation the intensity of which at some period of the storm's continuance equaled or exceeded the following rates:

Duration, minutes.....	5	10	15	20	25	30	35	40	45	50	60
Rates per hour (inches).....	3.00	1.80	1.40	1.20	1.08	1.00	0.94	0.90	0.87	0.84	0.80

In cases where no storm of sufficient intensity to entitle it to a place in the full table has occurred, the greatest precipitation of any single storm has been given, also the greatest hourly fall during that storm.

Table III gives, for about 30 stations of the Canadian Meteorological Service, the means of pressure and temperature, total precipitation and depth of snowfall, and the respective departures from normal values, except in the case of snowfall.

Table IV gives the heights of rivers referred to zeros of gages. These zeros are arbitrarily fixed, but, as a rule, are set at the plane of lowest water, if possible. The river gages are read once daily (8 a. m., seventy-fifth meridian time), and in times of emergency more frequently. The table shows the highest and lowest of all readings taken, the means of the regular daily readings, and the absolute monthly ranges.

The publication of the data from cooperative observers, heretofore appearing as Table II, was discontinued with the issue for December, 1907. The values will continue to be published in the monthly reports of the climatological services of the several states, and in the usual manner in the Annual Report of the Chief of Bureau.

Chart I.—Hydrographs for seven principal rivers of the United States.

Chart II, tracks of centers of high areas, and Chart III, tracks of centers of low areas. The roman numerals show number and chronological order of the centers. The figures within the circles show the days of the month; the letters *a* and *p* indicate, respectively, the observations at 8 a. m. and 8 p. m., seventy-fifth meridian time. Within each circle is also given (Chart II) the highest barometric reading and (Chart III) the lowest reading reported at or near the center at that time, and in both cases as reduced to sea level and standard gravity.

Chart IV.—Total precipitation. The scale of shades showing

the depth is given on the chart. Where the monthly amounts are too small to justify shading, and over sections of the country where the stations are too widely separated, or the topography is too diversified to warrant reasonable accuracy in shading, the actual depths are given for a limited number of representative stations. Amounts less than 0.005 inch are indicated by the letter "T," and no precipitation by 0.

Chart V.—Percentage of clear sky between sunrise and sunset. The average cloudiness at each Weather Bureau station is determined by numerous personal observations between sunrise and sunset. The difference between the observed cloudiness and 100 is assumed to represent the percentage of clear sky, and the values thus obtained are the basis of this chart, which does not relate to the nighttime.

Chart VI.—Isobars and isotherms at sea level and prevailing wind directions. The pressures have been reduced to sea level and standard gravity by the method described by Prof. Frank H. Bigelow on pages 13-16 of the Review for January, 1902. The pressures have also been reduced to the mean of the twenty-four hours by the application of a suitable correction to the mean of the 8 a. m. and 8 p. m. readings, at stations taking two observations daily, and to the 8 a. m. or 8 p. m. observation, respectively, at stations taking but a single observation. The diurnal corrections so applied will be found in Table 27, Volume II, Annual Report of the Chief of Weather Bureau, 1900-1901, pp. 140-164.

The isotherms on the sea-level plane have been constructed by means of the data summarized in chapter 8 of the Annual Report of the Chief of the Weather Bureau for 1900-1901, Volume II. The correction $t_0 - t$, or temperature on the sea-level plane minus the station temperature, as given by Table 48 of the above report, is added to the observed surface temperature to obtain the adopted sea-level temperature.

The prevailing wind directions are determined from hourly observations at the great majority of the stations; a few stations, having no self-recording wind direction apparatus, determine the prevailing direction from the daily or twice-daily observations only.

Chart VII.—Total snowfall. This is based on the reports from regular and cooperative observers, and shows the depth in inches and tenths of the snowfall during the month. In general, the depth is shown by lines inclosing areas of equal snowfall, but in special cases figures are also given.

Chart VIII.—Depth of snow on ground at the end of month, expressed in inches and tenths.

Stations.	Elevation of instruments.			Pressure, in inches.		Temperature of the air, in degrees Fahrenheit.								Precipitation, in inches.			Wind.															
	Barometer above sea level, feet.	Thermometers above ground.	A thermometer above ground.	Actual, reduced to mean of 24 hours.	Sea level, reduced to mean of 24 hrs.	Departure from normal.								Total.	Departure from normal.	Days with or more.	Total movement, miles.	Prevailing direction.	Maximum velocity.													
							Mean max., + mean min., +2.	Departure from normal.	Maximum.	Date.	Mean maximum.	Minimum.	Date.						Mean minimum.	Greatest daily range.	Mean wet thermometer.	Mean temperature of dew-point.	Mean relative humidity, per cent.	Miles per hour.	Direction.							
New England.																																
Eastport.	76	69	85	29.77	29.86	- .14	27.0	+ 2.3	52	8	32	-11	31	14	35	22	16	70	2.89	- 0.6	18	11,772	w.	n.	60	e.	12	4	6	21	7.7	18.4
Greenland.	108	81	117	29.78	29.91	- .14	25.8	+ 3.8	53	22	34	-20	20	3	38	22	15	65	2.63	+ 0.3	10	8,895	sw.	48	se.	7	11	12	8	4.8	1	
Portland, Me.	288	70	79	29.60	29.92	- .13	25.6	+ 4.4	53	21	35	-4	31	17	28	22	15	65	2.42	- 1.4	10	8,895	sw.	48	se.	7	11	12	8	4.8	1	
Concord.	404	12	47	29.49	29.96	- .09	17.4	+ 1.9	43	22	28	-15	30	16	37	22	15	65	2.07	- 1.3	9	6,779	sw.	40	nw.	5	24	3	4	2.6	4.3	
Burlington.	876	16	70	28.95	29.94	- .11	16.3	+ 1.2	48	22	29	-14	30	4	51	14	10	78	1.54	- 0.3	9	10,856	s.	51	s.	20	5	8	18	7.1	14.8	
Northfield.	125	115	188	28.79	29.94	- .11	31.0	+ 4.0	57	21	40	-1	30	22	30	26	19	63	1.93	- 0.6	16	6,783	s.	44	nw.	22	5	11	15	6.8	15.2	
Boston.	12	14	90	29.92	29.93	- .11	32.8	+ 0.7	52	7	40	-5	31	26	23	30	27	83	2.47	- 1.4	8	10,329	sw.	48	sw.	7	14	6	11	4.9	4.3	
Nantucket.	26	11	46	29.98	29.96	- .11	32.6	+ 1.2	54	7	40	-4	31	25	26	30	24	71	3.78	+ 0.4	10	15,569	sw.	83	ne.	24	13	11	7	5.0	12.6	
Block Island.	9					- .11	30.7	+ 2.3	53	7	40	-2	31	21	37				2.80	- 1.1	9	18,438	sw.	74	n.	24	11	13	7	4.7	6.6	
Narragansett.	160	57	67	29.78	29.96	- .10	29.9	+ 2.7	54	22	39	-2	31	21	30				3.03		9		sw.				24	0	7			
Providence.	159	122	182	29.79	29.97	- .10	28.9	+ 3.4	54	21	38	-2	31	20	31				2.93	- 0.9	10	7,105	w.	37	e.	7	14	8	9	4.6	7.4	
Hartford.	106	116	155	29.86	29.98	- .10	30.4	+ 3.1	54	22	39	-1	31	22	30				3.47	- 0.4	12	6,822	nw.	32	ne.	5	7	13	11	5.7	6.1	
New Haven.	106	116	155	29.86	29.98	- .10	30.4	+ 3.1	54	22	39	-1	31	22	30				4.18	+ 0.3	12	7,703	sw.	38	ne.	23	13	9	9	4.7	7.8	
Mid. Atlantic States.																																
Albany.	97	102	115	29.87	29.99	- .08	33.1	+ 1.5	50	22	34	-6	30	16	31				3.17	- 0.1	13	5,710	s.	27	s.	20	3	11	12	6.2	5.1	
Singhanton.	871	78	90	29.02	29.98	- .10	25.0	+ 1.9	50	21	34	-8	31	16	32																	

TABLE I.—Climatological data for U. S. Weather Bureau stations, January, 1908—Continued.

Stations.	Elevation of instruments.			Pressure, in inches.		Temperature of the air, in degrees Fahrenheit.										Precipitation, in inches.			Wind.				Clear days.	Partly cloudy days.	Cloudy days.	Average cloudiness during daylight, tenths.	Total snowfall.	
	Barometer above sea level, feet.	Thermometers above ground.	Anemometer above ground.	Actual, reduced to mean of 24 hours.	Sea level, reduced to mean of 24 hrs.	Departure from normal.	Mean max. + mean min. +2.	Departure from normal.	Maximum.	Date.	Mean minimum.	Greatest daily range.	Mean wet thermometer.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Total.	Departure from normal.	Days with .01, or more.	Total movement miles.	Prevailing direction.	Maximum velocity.							
																					Miles per hour.	Direction.						Date.
Up. Lake Reg.—Cont.																												
Escanaba.....	612 40	82	29.28	29.97	-.08	20.4	+5.9	47	20 28	-12	30	13	28	18	15	74	0.77	-.08	8	8,462	sw.	37	nw.	28 12	4 15	5.7	6.4	
Grand Haven.....	632 54	92	29.28	29.98	-.09	27.0	+2.5	42	21 23	0	30	22	24	25	22	73	1.67	-.11	10	11,040	sw.	48	w.	21 6	8 17	7.0	15.2	
Grand Rapids.....	707 121	162	29.20	30.00	-.06	26.4	+2.6	45	21 32	2	30	20	21	24	21	83	1.49	-.13	10	9,787	sw.	39	w.	22 8	4 19	6.9	11.7	
Houghton.....	668 66	74	29.18	29.94	-.11	19.2	+4.7	48	19 28	-19	30	10	39	.....	.....	.....	0.95	-.11	13	5,630	nw.	34	n.	22 3	13 15	7.0	11.1
Marquette.....	734 77	116	29.12	29.96	-.08	21.5	+5.6	53	20 28	-9	29	14	26	19	13	71	2.10	+0.1	14	9,649	w.	38	sw.	21 4	12 16	6.7	21.5	
Port Huron.....	638 70	120	29.26	29.98	-.08	24.0	+2.2	43	21 31	-9	30	17	22	22	18	80	1.95	+0.1	11	10,756	sw.	50	nw.	23 15	4 12	5.1	14.0	
Sault Sainte Marie..	614 40	61	29.23	29.96	-.07	16.2	+2.9	46	20 25	-25	29	7	30	15	12	81	0.89	-.13	14	7,705	sw.	41	w.	22 7	4 20	7.4	8.1	
Chicago.....	823 140	310	29.11	30.03	-.07	28.6	+4.9	49	21 35	0	29	22	25	27	23	80	2.05	0.0	7	12,930	sw.	44	nw.	26 11	10 10	5.2	13.2	
Milwaukee.....	681 122	139	29.26	30.02	-.06	24.5	+4.7	44	21 32	-6	29	18	24	22	18	77	3.24	+1.2	6	9,260	w.	43	ne.	12 14	10 7	4.3	28.8	
Green Bay.....	617 49	86	29.29	29.98	-.08	19.8	+5.2	44	21 28	-15	30	11	32	18	14	76	0.90	-.08	4	8,897	sw.	47	ne.	12 12	7 12	6.0	8.4	
Duluth.....	1,133 11	47	28.70	29.98	-.11	14.9	+4.5	46	20 25	-20	29	5	30	12	9	79	0.33	-.06	6	10,369	sw.	48	nw.	15 16	9 6	4.1	4.2	
North Dakota.																												
Moorhead.....	940 8	57	28.98	30.05	-.09	15.7	+13.0	54	20 27	-29	29	5	37	14	12	88	0.14	-.05	4	6,758	nw.	33	nw.	15 10	11 10	5.0	1.6	
Bismarck.....	1,674 8	57	28.20	30.07	-.06	21.4	+14.7	60	19 34	-14	29	8	43	17	12	70	0.24	-.03	4	8,016	nw.	43	nw.	6 8	10 13	5.9	1.2	
Devils Lake.....	1,482 11	44	28.33	29.98	-.14	12.9	+12.6	51	19 25	-28	29	1	44	10	6	76	0.10	-.05	2	8,057	w.	40	nw.	6 10	14 7	5.0	1.0	
Williston.....	1,875 14	56	27.97	30.04	-.07	16.8	+10.3	48	19 29	-22	29	5	46	14	11	82	0.04	-.05	3	6,952	nw.	52	nw.	6 13	9 9	4.8	0.4	
Upper Miss. Valley.																												
Minneapolis.....	102 208	...	...	...	...	28.9	+5.3	52	20 30	-25	29	10	36	...	...	...	0.49	-.02	5	9,563	nw.	44	w.	21 16	11 4	3.8	8.0
St. Paul.....	837 171	179	29.09	30.03	-.08	19.6	+8.0	49	20 30	-24	29	9	35	17	12	72	0.52	-.04	5	8,269	nw.	46	nw.	21 7	14 10	6.0	4.7	
La Crosse.....	714 71	87	29.24	30.05	-.06	21.6	+6.4	50	21 31	-13	29	12	29	12	29	...	0.34	-.07	3	4,965	s.	25	nw.	21 8	10 13	5.8	4.1	
Madison.....	974 70	78	28.93	30.03	-.07	22.2	+5.7	46	21 30	-10	29	15	26	20	16	77	0.97	-.06	5	9,125	nw.	42	n.	12 12	11 8	4.9	9.4	
Charles City.....	1,015 8	88	28.93	30.06	-.08	20.2	+8.8	46	21 31	-14	29	9	39	18	16	87	0.40	-.06	1	6,115	nw.	28	nw.	21 8	12 11	5.7	5.7	
Davenport.....	606 71	79	29.37	30.07	-.05	26.6	+5.8	52	21 35	-2	29	18	26	24	19	75	0.69	-.09	4	6,457	nw.	32	nw.	26 13	6 12	4.9	8.1	
Des Moines.....	861 84	101	29.12	30.07	-.07	27.0	+6.6	53	21 37	-7	29	17	37	24	19	74	0.46	-.08	3	7,272	sw.	32	sw.	19 10	13 8	5.2	6.0	
Dubuque.....	698 100	117	29.29	30.08	-.04	24.8	+6.5	50	21 33	-6	29	16	31	22	18	75	0.70	-.08	3	6,141	nw.	30	nw.	26 13	7 11	5.1	7.9	
Keokuk.....	614 64	77	29.38	30.09	-.05	30.4	+4.6	55	21 39	0	29	22	28	25	21	75	0.51	-.12	5	6,457	nw.	31	nw.	26 16	8 7	4.0	5.0	
Cairo.....	356 87	93	29.71	30.11	-.05	36.8	+2.0	59	1 44	16	24	30	24	33	27	72	2.84	-.10	11	7,476	n.	35	ne.	11 14	5 12	5.1	1.3	
La Salle.....	536 56	64	29.48	30.08	-.03	26.9	+4.6	50	21 35	-1	29	19	24	...	...	...	0.96	-.12	6	7,163	sw.	34	w.	26 12	10 9	5.0	6.2
Peoria.....	609 11	45	29.38	30.07	-.05	26.8	+3.7	53	21 36	1	29	18	26	24	20	77	0.59	-.16	5	7,692	s.	36	nw.	26 14	7 10	4.5	3.4	
Springfield, Ill.....	644 10	92	29.36	30.08	-.05	29.8	+3.5	56	21 38	6	29	22	24	26	22	74	1.77	-.05	8	7,976	s.	29	nw.	15 13	6 12	4.8	7.5	
Hannibal.....	534 75	109	29.49	30.09	-.04	30.2	+3.5	57	21 40	4	29	21	28	...	...	...	1.04	-.12	6	8,008	sw.	40	w.	7 14	8 9	4.5	9.3
St. Louis.....	567 208	217	29.44	30.07	-.07	34.0	+3.0	61	21 42	9	29	26	30	25	72	2.08	-.02	7	9,710	s.	36	nw.	27 15	7 9	4.7	6.0		
Missouri Valley.																												
Columbia, Mo.....	784 11	84	29.23	30.10	-.03	32.0	+4.8	58	21 42	5	29	22	32	...	...	...	1.13	-.11	4	7,326	s.	35	nw.	31 16	7 8	4.0	6.5
Kansas City.....	968 116	181	29.04	30.11	-.04	34.2	+8.0	59	20 44	4	29	25	27	29	21	61	0.13	-.10	2	11,553	s.	49	nw.	31 18	7 6	3.5	0.1	
Springfield, Mo.....	1,324 98	104	28.64	30.08	-.06	33.9	+2.6	59	21 43	10	16	25	28	30	25	74	2.20	-.05	9	9,029	s.	38	w.	31 19	6 6	3.4	8.4	
Iola.....	984 40	47	29.03	30.12	-.02	35.7	+8.1	59	21 47	11	31	25	30	...	...	...	0.65	-.03	2	7,227	sw.	33	n.	10 13	13 5	4.7	0.5
Topeka.....	85 89	...	...	...	...	34.0	+8.6	60	20 45	8	29	23	33	...	...	...	0.09	-.08	2	7,691	s.	34	nw.	31 17	8 6	3.6	0.3
Lincoln.....	1,189 11	84	28.79	30.10	-.05	31.0	+9.8	59	20 42	4	29	20	34	25	17	60	0.28	-.03	2	9,145	s.	54	nw.	7 16	11 4	3.8	4.2	
Omaha.....	1,105 115	121	28.88	30.10	-.05	30.2	+9.7	55	20 40	1	29	20	31	25	18	65	0.28	-.04	2	8,150	nw.	40	n.	28 13	10 8	4.6	3.7	
Valentine.....	2,598 47	54	27.29	30.10	-.02	29.0	+10.8	63	20 42	-3	31	16	43	23	18	70	0.16	-.04	4	8,905	nw.	44	nw.	7 13	14 4	4.1	1.6	
Sioux City.....	1,135 96	164	28.82	30.09	-.06	25.4	+9.8	51	18 36	-7	29	15	38	...	...	...	0.22	-.03	2	10,124	nw.	50	nw.	15 14	10 7	4.0	2.1
Pierre.....	1,572 70	75	28.36	30.09	-.04	26.6	+12.7	60	20 38	-4	31	15	43	22	15	64	0.22	-.02	5	7,398	nw.	46	nw.	14 11	13 7	4.5	2.8	
Huron.....	1,306 56	67	28.64	30.09	-.07	21.4	+11.9	63	20 35	-15	29	8	51	18	13	75	0.19	-.03	2	7,229	nw.	39	nw.	6 14	11 6	4.2	2.2	
Yankton.....	1,238 49	57	28.71	30.08	-.08	26.0	+10.5	57	20 38	-5	29																	

Stations.	Elevation of instruments.			Pressure, in inches.			Temperature of the air, in degrees Fahrenheit.										Precipitation, in inches.			Wind.				Total snowfall.								
	Barometer above sea level, feet.	Thermometers above ground.	Anemometer above ground.	Actual, reduced to mean of 24 hours.	Sea level, reduced to mean of 24 hrs.	Departure from normal.	Mean max. + mean min. + 2.	Departure from normal.	Maximum.	Date.	Mean maximum.	Minimum.	Date.	Mean minimum.	Greatest daily range.	Mean wet thermometer.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Total.	Departure from normal.	Days with .01, or more.	Total movement, miles.	Prevailing direction.	Maximum velocity.			Partly cloudy days.	Cloudy days.	Average cloudiness during daylight, tenths.			
																							Miles per hour.	Direction.	Date.	Clear days.						
<i>N. P. Coast Reg.—Cont.</i>																																
Tatoosh Island.....	86	7	57	29.86	29.96	— .02	43.4	+	2.2	51	5	47	32	31	40	10	41	37	79	10.31	—	1.8	21	17,836	e.	76	s.	5	7	3	7.1	
Portland, Oreg.....	153	68	106	29.91	30.08	— .00	42.2	+	3.1	54	24	47	27	31	37	18	40	36	80	4.73	—	1.8	18	5,073	nw.	29	s.	31	7	5	19	7.0
Roseburg.....	510	9	57	29.52	30.03	— .02	42.0	+	1.7	57	11	48	25	31	36	22	40	36	87	3.31	—	2.4	14	1,724	s.	19	se.	8	5	15	11	6.0
<i>Mid. Pac. Coast Reg.</i>																																
Eureka.....	62	62	80	30.02	30.09	— .01	49.0	—	2.1	67	17	55	34	25	43	25	46	44	84	6.15	—	0.5	18	5,037	se.	36	n.	14	4	14	13	6.5
Mount Tamalpais.....	2,375	11	18	27.93	30.09	— .02	44.2	—	2.1	60	10	48	34	24	40	16	42	40	88	7.23	—	0.4	17	12,550	se.	53	nw.	29	7	6	18	6.7
Point Reyes Light.....	490	7	18	29.52	30.04	— .02	51.4	—	2.1	67	11	56	40	24	47	20	44	40	88	7.65	—	3.3	17	13,194	se.	53	nw.	29	7	6	18	6.7
Red Bluff.....	332	50	56	29.74	30.11	— .01	47.0	—	2.1	67	11	54	31	30	40	27	44	41	84	4.85	—	0.4	16	3,427	nw.	22	se.	19	5	9	17	7.4
Sacramento.....	69	106	117	30.04	30.11	— .01	47.5	—	1.9	61	2	53	34	5	42	19	46	44	88	5.35	—	1.4	14	4,762	se.	34	sw.	23	5	9	17	7.2
San Francisco.....	155	200	204	29.93	30.10	— .01	50.8	—	1.3	64	11	56	40	8	46	16	44	44	80	4.88	—	0.2	14	4,151	se.	28	s.	23	5	11	15	6.5
San Jose.....	141	78	88	29.94	30.09	— .01	49.8	—	1.5	66	11	58	31	7	41	27	47	44														

* More than one date. † Record incomplete.

Stations.	Date.	Total duration.		Total amount of precipitation.	Excessive rate.		Amount before excessive began.	Depths of precipitation (in inches) during periods of time indicated.													
		From—	To—		Began—	Ended—		5 min.	10 min.	15 min.	20 min.	25 min.	30 min.	35 min.	40 min.	45 min.	50 min.	60 min.	80 min.	100 min.	120 min.
Abilene, Tex.	5-6			0.48														0.15			
Albany, N. Y.	12			0.61														*			
Alpena, Mich.	31			0.50														*			
Amarillo, Tex.	2-3			0.22														*			
Anniston, Ala.	31			1.94														0.29			
Asheville, N. C.	11			2.16														0.35			
Atlanta, Ga.	31			2.05														0.30			
Atlantic City, N. J.	7-8			1.10														0.23			
Augusta, Ga.	11	9:55 a. m.	3:00 p. m.	1.20	11:45 a. m.	12:00 m.	0.35	0.17	0.45	0.52											
Baltimore, Md.	12			1.61														0.50			
Bentonville, Ark.	3-4			1.27														0.11			
Binghamton, N. Y.	27			0.30														0.20			
Birmingham, Ala.	11			1.10														0.41			
Bismarck, N. Dak.	30-31			0.14														*			
Block Island, R. I.	12			0.64														0.24			
Boise, Idaho.	19-20			0.14									0.04								
Boston, Mass.	7			0.95														0.27			
Buffalo, N. Y.	26			0.66														*			
Cairo, Ill.	31			1.02														0.30			
Canton, N. Y.	26-27			0.60														*			
Charles City, Iowa.	31			0.40														*			
Charleston, S. C.	11-12			0.90														0.33			
Charlotte, N. C.	11	10:30 a. m.	6:00 p. m.	1.41	3:58 p. m.	4:06 p. m.	0.74	0.24	0.33												
Chattanooga, Tenn.	11-12			1.08														0.38			
Cheyenne, Wyo.	14-15			0.16														*			
Chicago, Ill.	12			1.22														*			
Cincinnati, Ohio.	11-12			0.49														0.17			
Cleveland, Ohio.	12			0.82														*			
Columbia, Mo.	11-12			0.40														*			
Columbia, S. C.	11	9:25 a. m.	4:15 p. m.	1.84	1:19 p. m.	1:54 p. m.	0.75	0.06	0.10	0.17	0.23	0.29	0.51	0.59							
Columbus, Ohio.	26			0.22									0.15								
Concord, N. H.	7-8			0.82																	

TABLE II.—Accumulated amounts of precipitation for each 5 minutes, etc.—Continued.

Stations.	Date.	Total duration.		Total amount of precipitation.	Excessive rate.		Amount before excessive began.	Depths of precipitation (in inches) during periods of time indicated.															
		From—	To—		Began—	Ended—		5 min.	10 min.	15 min.	20 min.	25 min.	30 min.	35 min.	40 min.	45 min.	50 min.	60 min.	80 min.	100 min.	120 min.		
Hartford, Conn.	7-8			1.53															*				
Hatteras, N. C.	7			1.41															0.44				
Huron, S. Dak.	30-31			0.19															*				
Indianapolis, Ind.	11-12			1.47															*				
Iola, Kans.	3			0.59															0.12				
Jacksonville, Fla.	6-7			1.53															0.38				
Jupiter, Fla.	18-19			1.51															0.50				
Kansas City, Mo.	3			0.08															*				
Keokuk, Iowa	22			0.15															*				
Key West, Fla.	10-11			0.29			0.08												*				
Knoxville, Tenn.	4			1.25															0.25				
La Crosse, Wis.	31			0.31															*				
La Salle, Ill.	31			0.49															*				
Lexington, Ky.	11-12			0.45															0.11				
Lincoln, Nebr.	31			0.26															*				
Little Rock, Ark.	31			1.02															0.49				
Los Angeles, Cal.	14	D. N.	5:45 a. m.	0.71	4:16 a. m.	4:23 a. m.	0.09	0.42	0.53										*				
Louisville, Ky.	11-12			0.72															0.20				
Lynchburg, Va.	7			1.76															0.30				
Macon, Ga.	31			3.37															0.54				
Madison, Wis.	31			0.54															*				
Marquette, Mich.	15-16			0.48															*				
Memphis, Tenn.	31			1.76															0.66				
Meridian, Miss.	31	3:10 p. m.	6:00 p. m.	0.98	4:05 p. m.	4:18 a. m.	0.20	0.11	0.39	0.63								*					
Milwaukee, Wis.	12			1.84															0.13				
Minneapolis, Minn.	30-31			0.36															*				
Mobile, Ala.	10	4:35 p. m.	D. N.	2.66	7:50 p. m.	8:19 p. m.	0.58	0.20	0.47	0.69	0.95	1.20	1.30					*					
Do	30-31	D. N.	4:10 p. m.	2.66	7:05 a. m.	8:21 a. m.	0.75	0.06	0.12	0.21	0.30	0.43	0.45	0.48	0.50	0.51	0.58	0.69	1.15				
Do	31	7:02 p. m.	D. N.	1.20	8:16 p. m.	9:06 p. m.	0.10	0.13	0.22	0.33	0.52	0.64	0.72	0.81	0.91	0.98	1.08	*					
Montgomery, Ala.	31	D. N.	8:40 p. m.	2.33	6:45 p. m.	6:53 p. m.	1.86	0.25	0.34									*					
Mount Weather, Va.	11-12			1.70														*					
Nantucket, Mass.	12			1.08														0.37					
Nashville, Tenn.	31			1.16														0.44					
New Haven, Conn.	12-13			1.55														0.58					
New Orleans, La.	6			1.73														0.42					
New York, N. Y.	12			1.31														0.37					
Norfolk, V. N. Y.	11-12	7:55 p. m.	D. N.	1.06	1:54 a. m.	1:59 a. m.	0.69	0.33										*					
Northfield, Vt.	7-8			0.71														*					
North Head, Wash.	1-2			1.23														0.37					
Oklahoma, Okla.	3-4			1.23														0.19					
Omaha, Nebr.	31			0.22														0.05					
Palestine, Tex.	30-31			1.28														0.40					
Parkersburg, W. Va.	26-27			0.37									0.09					*					
Pennacola, Fla.	10-11	5:50 p. m.	2:15 a. m.	1.32	9:59 p. m.	10:14 p. m.	0.37	0.09	0.31	0.44								*					
Peoria, Ill.	31			0.24														*					
Philadelphia, Pa.	12			1.06														0.41					
Pittsburg, Pa.	26-27			0.46														*					
Portland, Me.	12-13			1.17														0.34					
Portland, Oreg.	19-20			0.96														0.25					
Pueblo, Colo.	15			0.17														*					
Raleigh, N. C.	11			1.14														0.43					
Richmond, Va.	11-12	7:48 p. m.	D. N.	1.50	12:31 a. m.	12:50 a. m.	0.68	0.09	0.21	0.36	0.46							*					
Rochester, N. Y.	12-13			0.69														*					
Sacramento, Cal.	13-14			1.87														0.52					
St. Louis, Mo.	11-12			1.05														*					
St. Paul, Minn.	31			0.36														*					
Salt Lake City, Utah	14-15			0.22														*					
San Antonio, Tex.	5-6			0.86														0.41					
San Diego, Cal.	14			0.38														0.35					
Sandusky, Ohio	11-12			0.80														*					
San Francisco, Cal.	23-24			0.94														0.32					
Savannah, Ga.	11	D. N.	2:10 p. m.	1.73	10:43 a. m.	11:07 a. m.	0.74	0.06	0.14	0.26	0.40	0.56						0.29					
Scranton, Pa.	12-13			0.92														0.25					
Seattle, Wash.	19			0.62														0.52					
Shreveport, La.	30-31			1.12														*					
Spokane, Wash.	16-17			0.68														*					
Springfield, Ill.	11-12			0.91														*					
Springfield, Mo.	3-4			1.16														*					
Syracuse, N. Y.	7-8			1.20														*					
Tampa, Fla.	11	D. N.	7:10 a. m.	0.61	5:36 a. m.	5:46 a. m.	0.01	0.25	0.31									*					
Taylor, Tex.	30-31			0.39														0.22					
Thomasville, Ga.	6-7			3.15														0.49					
Toledo, Ohio	11-12			1.51														0.21					
Topeka, Kans.	3			0.06														0.03					
Valentine, Nebr.	31			0.07														*					
Vicksburg, Miss.	31	1:00 p. m.	3:32 p. m.	0.46	2:08 p. m.	2:13 p. m.	0.06	0.33										0.37					
Washington, D. C.	11-12			1.23														*					
Wichita, Kans.	3			0.16									0.03					*					
Wytheville, Va.	11-12			1.42														*					
Yankton, S. Dak.	31			0.09														*					
San Juan, P. R.	25-26	8:43 p. m.	D. N.	0.96	10:22 p. m.	10:32 p. m.	0.10	0.27	0.37									*					

* Self-register not working. † No precipitation during the month.

TABLE III.—Data furnished by the Canadian Meteorological Service, January, 1908.

Stations.	Pressure, in inches.			Temperature.				Precipitation.			Stations.	Pressure, in inches.			Temperature.				Precipitation.		
	Actual, reduced to mean of 24 hours.	Sea level, reduced to mean of 24 hours.	Departure from normal.	Mean.	Departure from normal.	Mean maximum.	Mean minimum.	Total.	Departure from normal.	Total snowfall.		Actual, reduced to mean of 24 hours.	Sea level, reduced to mean of 24 hours.	Departure from normal.	Mean.	Departure from normal.	Mean maximum.	Mean minimum.	Total.	Departure from normal.	Total snowfall.
St. John's, N. F.	29.62	29.76	- .10	27.8	+ 0	34.1	21.5	5.46	-0.45	15.7	Parry Sound, Ont.	29.22	29.95	-.06	15.8	+ 0	26.6	4.9	3.00	-1.08	27.1
Sydney, C. B. I.	29.79	29.53	- .10	26.3	+ 5.8	34.7	17.9	5.73	-0.63	16.0	Port Arthur, Ont.	29.23	29.97	- .10	12.8	+ 9.7	23.7	2.0	0.47	-0.35	4.4
Halifax, N. S.	29.75	29.86	- .11	26.5	+ 4.7	35.1	17.9	6.17	-0.40	18.9	Winnipeg, Man.	29.12	29.99	-.12	7.8	+14.6	17.8	- 2.3	0.44	-0.44	4.4
Grand Manan, N. B.	29.79	29.84	- .15	26.7	+ 3.3	35.8	17.6	4.57	-0.34	7.1	Minnedosa, Man.	29.08	29.99	- .11	8.9	+16.1	20.9	- 3.1	0.31	-0.49	3.3
Yarmouth, N. S.	29.80	29.87	- .13	29.5	+ 3.2	36.8	22.3	5.06	-0.35	15.2	Regina, Sask.	27.90	29.99	-.11	11.3	+15.1	22.5	0.1	0.26	-0.24	2.2
Charlottetown, P. E. I.	29.78	29.82	- .14	21.0	+ 4.0	29.1	12.9	4.67	-0.71	22.4	Medicine Hat, Alberta.	27.60	29.94	-.13	26.3	+20.8	38.3	14.3	0.10	-0.47	1.1
Chatham, N. B.	29.79	29.82	- .15	15.9	+ 6.1	26.7	5.1	3.03	-0.56	16.9	Swift Current, Sask.	27.34	30.02	-.07	17.7	+14.6	28.2	7.1	0.46	-0.18	4.4
Father Point, Que.	29.75	29.78	- .20	12.6	+ 4.6	21.7	3.5	1.90	-0.95	14.8	Calgary, Alberta.	26.31	29.96	-.07	25.8	+17.4	38.3	13.2	0.08	-0.45	0.0
Quebec, Que.	29.55	29.89	- .13	10.2	+ 1.1	18.6	1.8	4.50	+0.49	36.9	Banff, Alberta.	25.30	30.09	+ .09	19.4	+ 7.3	27.2	11.5	1.10	-0.09	11.1
Montreal, Que.	29.71	29.94	- .10	13.4	+ 1.7	22.6	4.2	4.71	+0.98	43.7	Edmonton, Alberta.	27.55	29.92	- .11	17.9	+16.1	27.5	8.3	0.31	-0.37	3.3
Rockliffe, Ont.	29.32	29.96	-.06	5.6	+ 0.8	18.1	- 6.9	1.89	-0.43	18.9	Prince Albert, Sask.	28.28	29.92	- .17	8.1	+16.5	21.7	- 5.4	0.40	-0.57	5.4
Ottawa, Ont.	29.66	30.00	-.03	11.8	+ 2.2	20.9	2.6	2.40	-0.59	21.5	Battleford, Sask.	28.13	29.96	- .12	8.2	+14.1	19.3	- 2.8	0.46	+0.06	4.4
Kingston, Ont.	29.66	30.00	-.05	18.6	+ 1.5	28.5	8.7	1.43	-2.02	9.9	Kamloops, B. C.	28.73	29.98	+ .02	27.9	+ 2.9	32.7	23.0	0.52	-0.30	5.2
Toronto, Ont.	29.56	29.96	-.09	24.4	+ 3.0	31.9	16.8	2.51	-0.41	19.0	Victoria, B. C.	29.93	30.03	+ .06	41.6	+ 3.1	44.7	38.4	2.32	-2.17	T
White River, Ont.	29.33	30.00	-.07	24.7	+ 2.5	32.0	17.5	2.74	-0.25	15.0	Barkerville, B. C.	25.56	29.97	+ .08	20.3	+ 2.5	27.1	13.6	2.50	-0.10	5.2
Port Stanley, Ont.	29.33	30.00	-.07	24.7	+ 2.5	32.0	17.5	2.74	-0.25	15.0	Hamilton, Bermuda.	29.96	30.13	-.00	61.7	- 0.3	68.0	55.3	4.46	-0.48	4.4
Southampton, Ont.	29.21	29.96	-.07	23.9	+ 3.5	30.8	17.0	2.69	-1.36	25.1	Dawson, Yukon.	29.96	30.13	-.00	61.7	- 0.3	68.0	55.3	4.46	-0.48	4.4

TABLE IV.—*Heights of rivers referred to zeros of gages, January, 1908.*

Stations.	Distance to mouth of river.	Flood stage on gage.	Highest water.		Lowest water.		Mean stage.	Monthly range.	Stations.	Distance to mouth of river.	Flood stage on gage.	Highest water.		Lowest water.		Mean stage.	Monthly range.				
			Height.	Date.	Height.	Date.						Height.	Date.								
<i>Republican River.</i>									<i>French Broad River.</i>												
Clay Center, Kans.	42	18	6.0	21, 24, 28	5.1	13	5.7	0.9	Asheville, N. C.	144	4	5.9	12	0.3	30, 31	1.2	5.6				
Smoky Hill-Kansas River.									Dandridge, Tenn.	46	12	14.0	12	1.8	26, 31	3.8	12.2				
Ablene, Kans.	254	22	1.0	30	0.0	1	0.4	1.0	<i>Tennessee River.</i>												
Manhattan, Kans.	160	18	3.0	22-24, 27, 28	2.4	16-18, 31	2.8	0.6	Knoxville, Tenn.	635	12	17.8	13	3.0	27, 31	5.9	14.0				
Topeka, Kans. (?)	87	21	5.9	20, 21, 25	5.6	1-12, 15, 17, 18, 27, 30	5.7	0.3	Loudon, Tenn.	590	25	13.0	14	2.0	30, 31	5.0	11.0				
<i>Missouri River.</i>									Kingston, Tenn.	556	25	13.6	14	4.1	29	7.0	9.5				
Bismarck, N. Dak.	1,309	14	4.5	24	2.5	1-4	3.6	2.0	Chattanooga, Tenn.	452	33	20.3	15	5.6	28, 29	11.3	14.7				
Pierre, S. Dak. (31) ..	1,114	14							Bridgeport, Ala.	402	24	15.0	16	4.3	29, 31	8.8	10.7				
Sioux City, Iowa.	784	17	9.5	30, 31	2.9	6-8	4.4	6.6	Guntersville, Ala.	349	31	22.6	16	7.0	30	14.5	15.6				
Blair, Nebr.	705	15	4.9	30	2.3	1-3	3.5	2.6	Florence, Ala.	255	16	12.9	18	4.4	30, 31	8.8	8.5				
St. Joseph, Mo.	481	10	-0.7	24	-2.6	20	-1.6	1.9	Riverton, Ala.	225	26	20.4	18	7.3	31	14.5	13.1				
Kansas City, Mo.	388	21	4.9	26, 27	3.6	19	4.4	1.3	Johnsonville, Tenn.	95	21	21.0	7	7.3	31	14.7	13.7				
Glasgow, Mo.	231	18	3.3	4	2.5	25	2.9	0.8	<i>Ohio River.</i>												
Boonville, Mo.	199	20	6.3	31	5.4	21, 22	5.7	0.9	Pittsburg, Pa.	966	22	15.1	14	2.6	12	6.2	12.5				
Hermann, Mo.	103	24	5.2	1	4.3	22	4.7	0.9	Dam No. 2, Pa.	956	25	15.0	14	4.1	12	7.3	10.9				
<i>Minnesota River.</i>									Beaver Dam, Pa.	925	27	21.4	14	6.2	12	10.5	15.2				
Mankato, Minn.	127	18	3.0	2	2.2	6	2.5	0.8	Wheeling, W. Va.	875	36	20.5	15	6.5	12	10.3	14.0				
St. Croix River.									Parkersburg, W. Va.	785	36	19.0	16	8.0	11, 12	11.2	11.0				
Stillwater, Minn. (31) ..	23	11							Point Pleasant, W. Va.	703	39	23.7	16	8.0	12	14.3	15.7				
<i>Illinois River.</i>									Huntington, W. Va.	660	50	27.2	17	12.6	13	18.6	14.6				
La Salle, Ill.	197	18	21.4	1	16.7	31	18.9	4.7	Catlettsburg, Ky.	651	50	28.0	17	12.0	13	18.7	16.0				
Peoria, Ill.	135	14	15.7	5, 6	12.5	31	14.2	3.2	Portsmouth, Ohio	612	50	28.7	17	12.8	27	19.5	15.9				
<i>Omaha River.</i>									Maysville, Ky.	559	50	28.1	17	13.1	28	19.6	15.0				
Johnstown, Pa.	64	7	7.6	12	2.6	9-11, 31	3.2	5.0	Cincinnati, Ohio	499	60	29.9	18	14.5	28	22.0	15.4				
<i>Allegheny River.</i>									Madison, Ind.	413	46	25.4	1	13.4	29, 30	19.7	12.0				
Warren, Pa.	177	14	5.5	1	1.0	10, 11	2.4	4.5	Louisville, Ky.	367	28	11.0	1	6.1	30	8.7	4.9				
Parker, Pa.	73	20	6.8	1	2.0	27	3.6	4.8	Evansville, Ind.	184	35	25.2	1	11.5	30	19.3	13.7				
Freeport, Pa.	29	20	13.1	13	5.1	26	7.2	8.0	Mount Vernon, Ind.	148	35	24.8	2	10.6	31	19.4	14.2				
<i>Youghiogheny River.</i>									Paducah, Ky.	47	40	26.1	8	12.3	31	21.5	13.8				
Confluence, Pa. (?)	59	10	5.4	13	1.7	21	2.5	3.7	Cairo, Ill.	1	45	29.0	8	17.3	31	25.3	11.7				
West Newton, Pa. (3) ..	15	23	9.4	13	1.8	11	3.4	7.6	<i>Neosho River.</i>												
<i>Monongahela River.</i>									Iola, Kans.	262	10	0.6	6	0.1	22, 23, 25, 29-31	0.2	0.5				
Fairmont, W. Va.	119	25	22.0	13	15.2	26	16.3	6.8	Oswego, Kans.	184	20	3.5	5	0.5	27-31	1.0	3.0				
Greensboro, Pa. (?)	81	18	15.8	13	7.7	11	9.3	8.1	Fort Gibson, Okla.	3	22	12.2	7	9.2	24-31	9.9	3.0				
Lock No. 4, Pa.	40	28	20.3	14	8.2	11	10.9	12.1	<i>Canadian River.</i>												
<i>Muskingum River.</i>									Calvin, Okla. (1)	99	10	4.3	6	2.9	29	3.4	1.4				
Zanesville, Ohio	70	25	11.8	1	8.7	26	9.8	3.1	<i>Black River.</i>												
Little Kanawha River.									Blackrock, Ark.	67	12	10.0	13, 14	4.1	5-11	6.5	5.9				
Creston, W. Va.	38	20	9.3	13	2.9	26	4.4	6.4	<i>White River.</i>												
New-Great Kanawha River.									Calicoorock, Ark.	272	18	4.2	13	0.5	3	1.9	3.7				
Hinton, W. Va.	153	14	12.5	13	2.8	26	4.3	9.7	Batesville, Ark.	217	18	6.7	13	2.4	3, 4	4.0	4.3				
Charleston, W. Va.	58	30	23.5	14	5.2	22	7.8	18.3	Clarendon, Ark.	75	30	22.3	20, 21	14.4	4	19.0	7.9				
<i>Sotola River.</i>									<i>Arkansas River.</i>												
Columbus, Ohio	110	17	6.8	1	3.0	22	4.0	3.8	Wichita, Kans.	832	10	1.6	31	-1.5	6, 7, 22, 23	1.1	3.1				
<i>Licking River.</i>									Tulsa, Okla.	551	16	4.6	7-9	3.0	28-31	3.6	1.6				
Falmouth, Ky.	30	25	4.0	1	2.0	4, 31	2.8	2.0	Webbers Falls, Okla.	465	23	8.0	8	5.2	24-31	5.9	2.8				
<i>Kentucky River.</i>									Fort Smith, Ark.	408	22	9.1	8	2.9	28-31	5.0	6.2				
Beattyville, Ky.	254	30	5.6	6	0.6	4	2.1	5.0	Dardanelle, Ark.	256	21	8.6	9	2.7	31	5.0	5.9				
Frankfort, Ky.	65	31	9.1	7, 8	6.6	27	7.6	2.5	Little Rock, Ark.	175	23	11.8	13	4.1	31	7.5	7.7				
<i>Wabash River.</i>									Pine Bluff, Ark.	121	25	14.4	14	6.5	31	10.3	7.9				
Terre Haute, Ind.	171	16	17.3	3	3.4	29	8.7	13.9	<i>Yazoo River.</i>												
Mount Carmel, Ill.	75	15	15.5	5	5.4	31	10.8	10.1	Greenwood, Miss.	175	38	17.4	13, 14, 18	10.7	1	15.4	6.7				
<i>Cumberland River.</i>									Yazoo City, Miss.	80	25	12.0	16-21	3.2	1	9.7	8.8				
Burnside, Ky.	518	50	16.8	1	3.2	31	7.3	13.6	<i>Ouachita River.</i>												
Celina, Tenn.	383	45	18.9	2	5.3	31	10.5	13.6	Camden, Ark.	304	39	27.2	16	8.5	31	16.2	18.7				
Carthage, Tenn.	308	40	16.0	3	4.4	31	10.1	11.6	Monroe, La.	122	40										
Nashville, Tenn.	193	40	22.6	5	10.0	31	15.7	12.6	<i>Red River.</i>												
Clarksville, Tenn.	126	43	27.9	8	8.0	31	16.7	19.9	Denison, Tex.	768	22	4.1	5, 9	1.0	1, 28-30	2.1	3.1				
<i>Cinich River.</i>									Arthur City, Tex.	688	27	13.0	11	7.4	24, 29, 30	9.2	5.6				
Speers Ferry, Va.	156	20	7.8	13	0.9	22, 23	2.2	6.9	Fulton, Ark.	515	28	19.8	9	8.8	31	14.1	11.0				
Clinton, Tenn.	52	25	19.4	1	6.0	26	9.8	13.4	Shreveport, La.	327	29	12.7	11	5.6	31	9.5	7.1				
<i>South Fork Holston River.</i>									Alexandria, La.	118	33	19.0	1	10.3	31	15.1	8.7				
Holston River.									<i>Mississippi River.</i>												
Bluff City, Tenn.	35	12	8.9	12	1.9	31	3.0	7.0	Fort Ripley, Minn. (31) ..	2,082	10										
<i>Rogersville, Tenn.</i>									St. Paul, Minn. (31) ..	1,964	14										
	103	14	13.0	13	3.0	31	4.1	10.0	Red Wing, Minn. (31) ..	1,914	14										
									Reeds Landing, Minn. (2) ..	1,884	12	0.0	2	-0.4	13-31	-0.3	0.2				

TABLE IV.—*Heights of rivers referred to zeros of gages—Continued.*

Stations.	Distance to mouth of river.	Flood stage on gage.	Highest water.		Lowest water.		Mean stage.	Monthly range.	Stations.	Distance to mouth of river.	Flood stage on gage.	Highest water.		Lowest water.		Mean stage.	Monthly range.
			Height.	Date.	Height.	Date.						Height.	Date.	Height.	Date.		
<i>Mississippi River—Cont'd.</i>	<i>Miles.</i>	<i>Feet.</i>	<i>Feet.</i>		<i>Feet.</i>		<i>Feet.</i>	<i>Feet.</i>	<i>Catawba-Wateres River.</i>	<i>Miles.</i>	<i>Feet.</i>	<i>Feet.</i>		<i>Feet.</i>		<i>Feet.</i>	<i>Feet.</i>
La Crosse, Wis. (20)	1,819	12							Mount Holly, N. C.	143	15	9.5	13	1.8	21-31	2.6	7.7
Prairie du Chien, Wis. (21)	1,759	18							Catawba, S. C.	107	11	16.8	13	2.5	26	5.3	14.3
Dubuque, Iowa	1,699	18	3.5	27	1.4	3-7	2.7	2.1	Camden, S. C.	37	24	29.3	14	8.0	31	16.1	21.3
Leclaire, Iowa (2)	1,609	10	1.2	24	0.0	3	0.6	1.2	<i>Ongaree River.</i>								
Davenport, Iowa (1)	1,593	15	4.9	30	1.1	10	2.0	3.8	Columbia, S. C.	52	15	19.1	13	1.4	26	6.3	17.7
Muscatine, Iowa	1,562	16	5.1	28	2.2	7-10	3.1	2.9	<i>Savannah River.</i>								
Galland, Iowa	1,472	8	1.5	24	0.5	11-13, 27	0.8	1.0	Calhoun Falls, S. C.	347	15	7.5	13	3.3	25, 26	4.5	4.2
Keokuk, Iowa	1,463	15	1.8	23	0.9	19	0.5	2.4	Augusta, Ga.	268	32	27.4	13	9.5	26, 27	14.7	17.9
Warren, Ill.	1,458	18	4.5	23	2.8	10	3.5	1.7	<i>Oconee River.</i>								
Hannibal, Mo.	1,402	13	2.2	2, 23	0.6	19, 20	1.5	1.6	Dublin, Ga.	79	30	15.7	16	4.0	25, 27, 30	9.5	11.7
Grafton, Ill.	1,306	23	5.9	9, 10, 14, 24	5.0	22	5.6	0.9	<i>Ocmulgee River.</i>								
St. Louis, Mo.	1,264	30	5.0	14	3.3	31	4.4	1.7	Macon, Ga.	203	18	15.9	12	4.0	27	7.7	11.9
Chester, Ill.	1,189	30	5.8	15	3.6	23	4.4	2.2	Abbeville, Ga.	96	11	13.3	15	7.0	30	10.8	6.3
Cape Girardeau, Mo.	1,128	28	10.5	15, 16	7.8	23, 24, 31	8.8	2.7	<i>Flint River.</i>								
New Madrid, Mo.	1,003	34	23.9	9	14.5	31	20.9	9.4	Montezuma, Ga.	152	20	14.2	3	6.3	30	9.4	7.9
Luxora, Ark.	905	33	16.5	10	8.7	31	13.9	7.8	Albany, Ga.	90	20	17.3	11	6.3	31	11.6	11.0
Memphis, Tenn.	843	33	21.3	10, 11	13.6	31	18.7	7.7	Bainbridge, Ga.	29	22	19.6	12	10.3	31	15.3	9.3
Helena, Ark.	767	42	27.4	12, 13	19.5	31	24.3	7.9	<i>Chattahoochee River.</i>								
Arkansas City, Ark.	635	42	31.0	15	24.3	31	28.0	6.7	West Point, Ga.	239	20	10.0	2	3.7	26, 28, 29	5.1	6.3
Greenville, Miss.	595	42	26.0	16	19.7	1	23.3	6.3	Eufaula, Ala.	90	40	27.5	1	5.4	31	12.2	22.1
Vicksburg, Miss.	474	45	28.6	16-18	19.5	1	25.4	9.1	Alaga, Ala.	30	25	27.8	1	8.3	31	15.1	19.5
Natchez, Miss.	373	46	29.5	19	19.7	1	26.1	9.8	<i>Chosa River.</i>								
Baton Rouge, La.	240	35	21.7	20	12.9	1	19.0	8.8	Rome, Ga.	266	30	15.0	1	2.8	28, 30, 31	5.6	12.2
Donaldsonville, La.	188	28	16.5	19-22	8.5	1	14.1	8.0	Gadsden, Ala.	162	22	15.0	2	3.7	28-31	7.5	11.3
New Orleans, La.	108	16	10.7	21	6.0	1	8.8	4.7	Lock No. 4, Ala.	113	17	11.8	2	3.2	28-31	6.4	8.6
<i>Atchafalaya River.</i>									Wetumpka, Ala.	12	45	28.5	2	7.6	31	15.3	20.9
Stimmesport, La.	127	33	25.6	19, 20	17.7	1	23.1	7.9	<i>Alabama River.</i>								
Melville, La.	103	31	28.2	19, 20	21.2	1	26.0	7.0	Montgomery, Ala.	323	35	28.3	2	5.3	31	13.4	23.0
<i>Hudson River.</i>									Selma, Ala.	246	35	32.0	3	6.9	31	17.5	25.1
Troy, N. Y.	154	14	8.7	1	3.7	28	5.6	5.0	<i>Black Warrior River.</i>								
Albany, N. Y.	147	12	6.0	1	1.3	30, 31	3.6	4.7	Tuscaloosa, Ala.	90	43	26.4	13	9.1	31	16.4	17.3
<i>Delaware River.</i>									<i>Tombigbee River.</i>								
Hancock (E. Branch), N. Y.	287	12	6.3	6, 8	3.3	30	4.3	3.0	Columbus, Miss.	316	33	7.0	8	0.1	31	3.7	7.1
Hancock (W. Branch), N. Y.	287	10	6.5	11	3.1	25	4.1	3.4	Demopolis, Ala.	168	35	22.6	15	6.5	31	16.7	16.1
Port Jervis, N. Y.	215	14	4.8	14	0.8	31	2.3	4.0	<i>Pasagoula River.</i>								
Phillipsburg, N. J. (4)	146	26	8.4	14	2.5	25	4.3	5.9	Merrill, Miss.	78	20	18.7	15	6.0	31	12.7	12.7
Trenton, N. J.	92	18	6.0	1	2.5	30, 31	4.0	3.5	<i>Pearl River.</i>								
<i>North Branch Susquehanna.</i>									Columbia, Miss.	110	18	13.0	14	5.4	31	7.6	7.6
Binghamton, N. Y.	183	16	6.1	1	2.6	26	3.4	3.5	<i>Sabine River.</i>								
Wilkes-Barre, Pa.	60	17	12.0	1	5.5	22, 26, 27	7.9	6.5	Logansport, La.	315	25	21.4	12	7.1	30	15.0	14.3
<i>West Branch Susquehanna.</i>									<i>Neches River.</i>								
Williamsport, Pa.	39	20	9.0	14	2.3	25	4.2	6.7	Beaumont, Tex.	18	10	4.3	7	1.4	24	2.7	2.9
<i>Susquehanna River.</i>									<i>Trinity River.</i>								
Harrisburg, Pa.	69	17	8.0	14	2.4	31	4.4	5.6	Dallas, Tex.	320	25	7.8	4	4.9	28	5.9	2.9
<i>Shenandoah River.</i>									Long Lake, Tex.	211	35	38.4	1	2.0	30	15.9	36.4
Riverton, Va.	58	22	18.0	13	0.4	31	2.1	17.6	Liberty, Tex.	20	25	24.8	12, 13	7.8	31	17.1	17.0
<i>Potomac River.</i>									<i>Brasos River.</i>								
Cumberland, Md.	290	8	9.0	12	3.0	8-11, 31	3.5	6.0	Waco, Tex.	285	22	5.0	1	3.5	30, 31	4.2	1.5
Harpers Ferry, W. Va.	172	18	19.9	13	2.0	11	6.0	17.9	Hempstead, Tex.	140	40	12.0	6	4.0	25-31	7.0	8.0
<i>James River.</i>									Booth, Tex.	61	39	15.8	5	4.3	28-31	7.7	11.5
Lynchburg, Va.	260	18	16.2	13	2.2	26	3.8	14.0	<i>Colorado River.</i>								
Columbia, Va.	167	18	25.9	14	6.2	27	9.7	19.7	Austin, Tex.	214	18	2.5	7, 8	1.2	20-23, 25	1.6	1.3
Richmond, Va.	111	10	13.3	14	1.2	5, 21, 22, 29	2.9	12.1	Columbus, Tex.	98	24	9.7	7	5.9	29-31	6.6	3.8
<i>Rappahannock River.</i>									<i>Red River of the North.</i>								
Clarksville, Va.	196	12	9.9	9	1.0	26	3.4	8.9	Moorhead, Minn. (20)	284	26						
Weldon, N. C.	129	30	38.6	10	13.0	27	21.4	25.6	<i>Snake River.</i>								
<i>Tar River.</i>									Lewiston, Idaho	144	24	2.7	22	1.8	{ 14, 15, } { 25-28, 31 }	2.0	0.9
Greenville, N. C.	21	22	17.2	15, 16	7.9	30	12.5	9.3	<i>Columbia River.</i>								
<i>Deep River.</i>									Wenatchee, Wash.	473	40	5.0	1-7	3.9	31	4.7	1.1
Moneuse, N. C.	171	25	20.1	8	8.5	20-26, 31	7.8	11.6	Umatilla, Oreg.	270	25	2.3	1, 2	0.7	31	1.6	1.6
<i>Cape Fear River.</i>									The Dalles, Oreg.	165	40	3.0	1	0.4	31	1.6	2.6
Fayetteville, N. C.	112	38	36.3	14	6.2	26	18.1	30.1	<i>Willamette River.</i>								
<i>Pedee River.</i>									Albany, Oreg.	118	20	10.5	1	4.2	31	7.3	6.3
Cheraw, S. C.	149	27	31.6	14	4.8	27, 31	14.8	26.8	Portland, Oreg.	12	15	10.1	1	2.9	28, 29	6.1	7.2
Smiths Mills, S. C. (4)	51	16	17.4	20, 21	12.0	31	15.4	5.4	<i>Sacramento River.</i>								
<i>Lynch Creek.</i>									Red Bluff, Cal.	265	23	16.5	14	3.0	12	7.1	13.5
Edgingham, S. C.	35	12	13.1	15	5.5	30, 31	8.1	7.6	Colusa, Cal.	156	25	23.4	25	8.9	13	15.6	14.5
<i>Black River.</i>									Knights Landing, Cal.	99	18	15.0	26, 27	8.6	14	12.3	6.4
Kingstree, S. C.	45	12	10.0	15-17, 19-21	7.5	8, 31	8.7	2.5	Sacramento, Cal.	64	25	19.5	22	13.2	13, 14	16.0	6.3

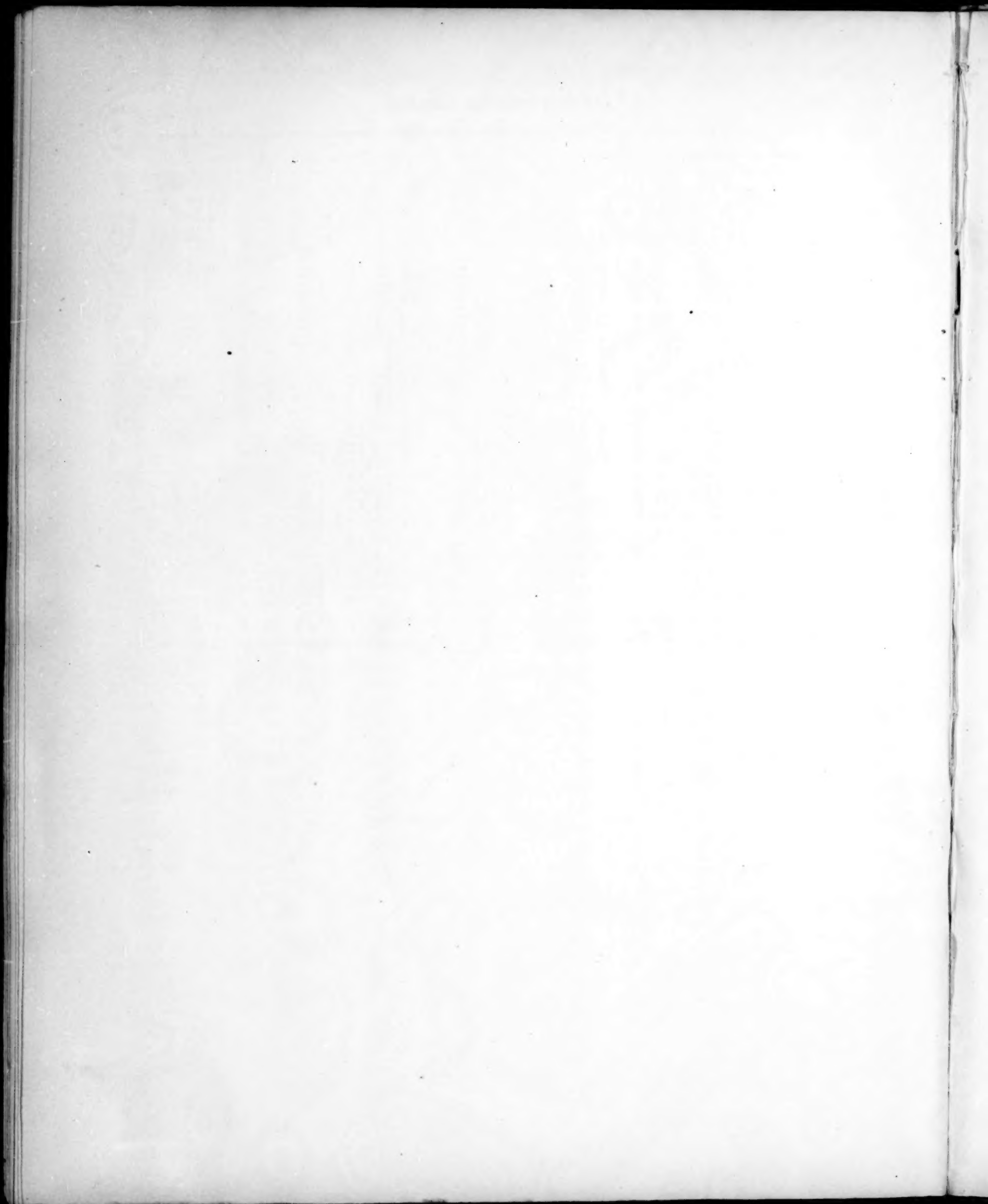
Figures denote number of days frozen.

(4) 4 days missing.

Honolulu, T. H., latitude 21° 19' north, longitude 157° 30' west; barometer above sea, 38 feet; gravity correction, -0.057 inch, applied. January, 1908.

Day.	Pressure.*		Air temperature.				Moisture.				Wind.				Precipitation.		Clouds.					
																	8 a. m.			8 p. m.		
	s a. m.	s p. m.	s a. m.	s p. m.	Maximum.	Minimum.	Wet.	Relative humidity.	Wet.	Relative humidity.	Direction.	Velocity.	Direction.	Velocity.	s a. m.	s p. m.	Amount.	Kind.	Direction.	Amount.	Kind.	Direction.
1	29.99	29.99	73.5	73.0	78	71	65.5	65	65.0	65	e.	9	e.	10	0.00	0.00	3	Cu.	e.	Few	S.	ne.
2	30.05	30.04	74.0	73.0	77	67	64.5	60	65.0	65	e.	9	e.	9	0.01	0.00	3	Cu.	e.	0	0	0
3	30.07	30.06	73.0	72.0	77	71	64.0	61	64.0	65	ne.	17	e.	6	0.00	0.00	3	Cu.	e.	0	0	0
4	30.09	30.05	73.7	72.0	78	68	65.0	62	66.0	73	e.	6	e.	5	0.00	0.00	1	Cu.	e.	1	S.	ne.
5	30.08	30.05	71.0	70.0	79	66	65.0	72	67.0	86	w.	2	ne.	12	0.01	0.01	Few	Cu.	0	Few	A.-s.	0
6	30.08	30.09	73.7	70.0	79	66	65.4	64	65.0	77	e.	4	n.	4	0.00	0.00	Few	Cu.	0	0	0	0
7	30.11	30.09	69.0	68.5	76	64	61.5	65	63.0	74	ne.	4	ne.	8	0.00	0.00	2	Cu.	e.	1	S.-cu.	ne.
8	30.11	30.08	71.5	68.5	77	64	61.7	57	63.0	74	ne.	4	ne.	5	0.00	0.00	Few	A.-s.	0	Few	A.-s.	0
9	30.13	30.08	70.0	68.5	77	63	60.3	56	60.0	60	n.	4	n.	6	0.00	0.00	1	A.-cu.	nw.	1	Cu.	ne.
10	30.09	30.08	66.2	66.5	74	61	59.0	65	61.0	73	e.	1	ne.	5	0.00	0.00	Few	Cu.	0	1	A.-s.	s.
11	30.13	30.11	69.4	68.0	75	62	60.8	61	62.0	71	ne.	4	ne.	4	0.00	0.00	Few	A.-cu.	0	Few	A.-s.	w.
12	30.09	30.01	72.4	67.5	76	63	63.6	62	61.0	69	e.	3	ne.	5	0.00	0.00	9	S.-cu.	e.	8	A.-s.	sw.
13	30.02	29.98	69.4	69.0	77	66	62.1	71	61.0	63	ne.	4	ne.	3	0.00	0.00	9	S.-cu.	sw.	8	A.-cu.	sw.
14	30.03	30.10	72.0	68.0	76	66	65.1	69	62.0	71	ne.	3	nw.	8	0.00	0.24	Few	S.-cu.	0	3	S.-cu.	nw.
15	30.18	30.16	68.6	70.2	73	66	58.0	54	59.0	50	ne.	10	e.	10	T.	0.00	5	S.-cu.	e.	6	Cu.	ne.
16	30.20	30.18	69.1	70.0	74	63	58.0	51	61.0	59	ne.	12	ne.	15	0.02	0.00	8	S.-cu.	e.	7	Cu.	ne.
17	30.17	30.11	70.2	70.5	75	67	59.2	51	63.0	66	e.	10	e.	6	T.	0.00	8	S.-cu.	e.	6	Cu.	e.
18	30.13	30.12	73.0	72.0	77	68	61.0	50	63.0	61	e.	10	ne.	13	0.00	0.00	4	Cu.	e.	5	Cu.	ne.
19	30.18	30.17	73.0	72.0	77	65	64.2	58	63.5	63	e.	13	se.	15	0.00	0.04	4	Cu.	ne.	7	Cu.	ne.
20	30.20	30.15	73.0	72.2	76	67	63.0	57	64.2	65	e.	18	e.	16	0.02	0.00	3	Cu.	e.	2	Cu.	ne.
21	30.16	30.14	73.4	72.0	77	70	63.0	56	63.5	63	e.	11	e.	9	0.00	0.00	2	Cu.	e.	4	Cu.	ne.
22	30.17	30.12	72.3	72.0	76	70	61.0	52	63.0	61	ne.	17	ne.	12	0.00	0.00	1	Cu.	e.	2	A.-s.	w.
23	30.13	30.11	72.2	71.0	77	70	62.0	56	63.0	64	ne.	9	e.	8	0.00	0.00	3	Cu.	e.	0	0	0
24	30.13	30.12	69.7	71.0	78	66	62.0	65	64.0	68	ne.	6	n.	2	0.00	0.00	9	A.-cu.	sw.	9	S.	ne.
25	30.12	30.10	71.0	69.0	78	68	63.0	64	64.0	76	ne.	1	ne.	10	0.00	0.00	5	S.-cu.	n.	3	A.-s.	nw.
26	30.09	30.04	71.4	69.0	78	65	64.0	67	64.0	76	ne.	5	e.	1	0.00	0.00	7	S.-cu.	se.	0	0	0
27	30.05	30.02	69.0	70.0	77	63	63.0	72	66.0	81	0	0	ne.	5	0.00	0.00	9	S.-cu.	ne.	0	0	0
28	30.04	30.03	73.0	72.0	79	65	66.0	69	66.0	73	e.	2	ne.	8	0.00	T.	1	A.-s.	w.	Few	A.-s.	0
29	30.08	30.08	73.0	71.5	78	69	66.5	71	64.5	68	e.	3	e.	14	0.00	T.	1	S.-cu.	ne.	1	A.-s.	n.
30	30.09	30.10	73.0	70.0	78	69	65.0	65	67.0	86	e.	14	ne.	15	0.00	0.04	2	Cu.	ne.	5	N.	ne.
31	30.09	30.08	72.0	71.2	76	66	65.0	69	64.2	68	e.	9	w.	6	0.03	0.06	3	Cu.	ne.	1	Cu.-n.	nw.
Mean	30.106	30.085	71.5	70.3	76.8	66.3	62.8	61.8	63.5	68.8	e.	7.2	ne.	7.9	0.09	0.39	3.9	Cu.	e.	2.9	A.-s.	ne.

Observations are made at 8 a.m. and 8 p.m., local standard time, which is that of 157° 30' west, and is 5^h and 30^m slower than 75th meridian time. *Pressure values are reduced to sea level and standard gravity.



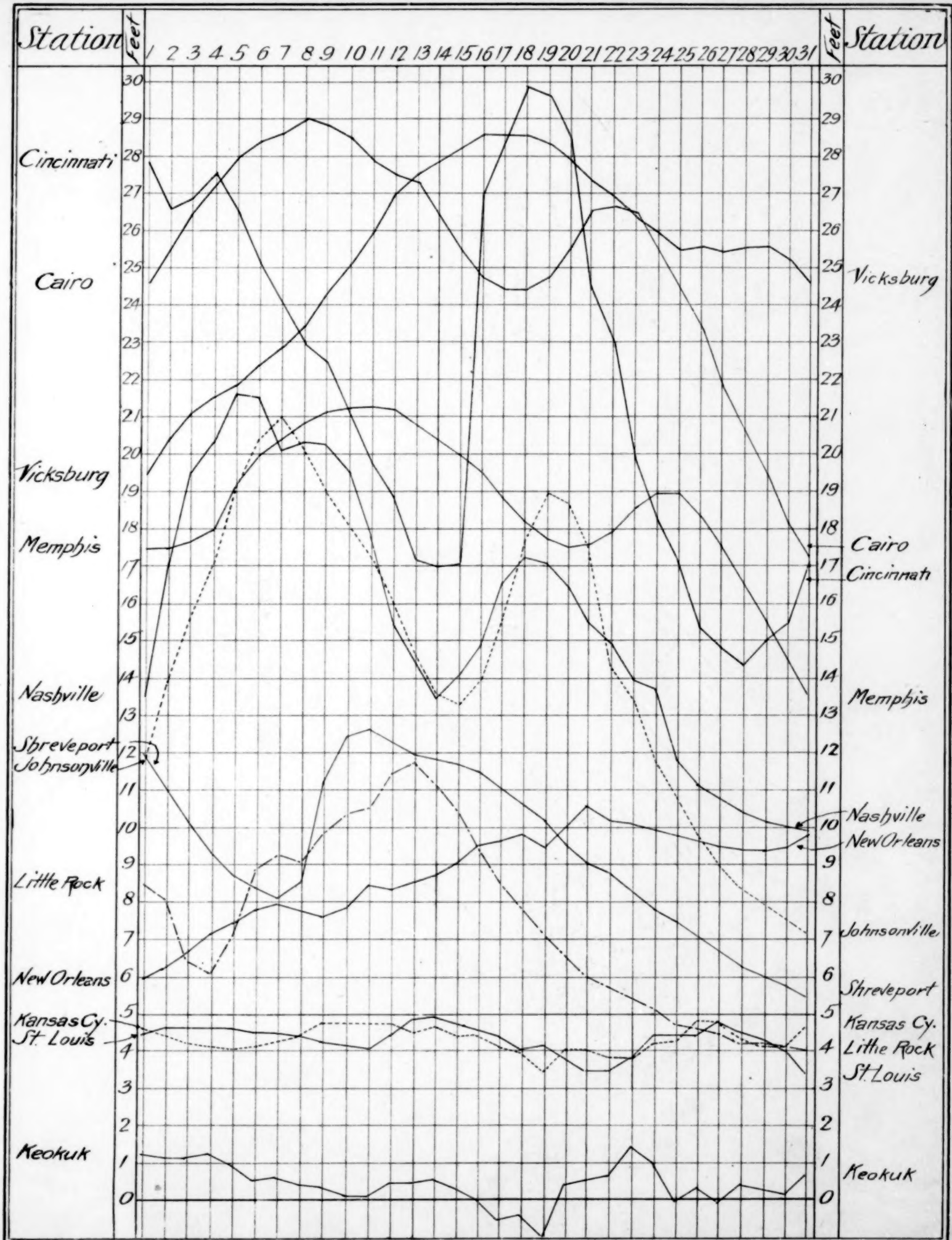


Chart II. Tracks of Centers of High Areas, January, 1908.

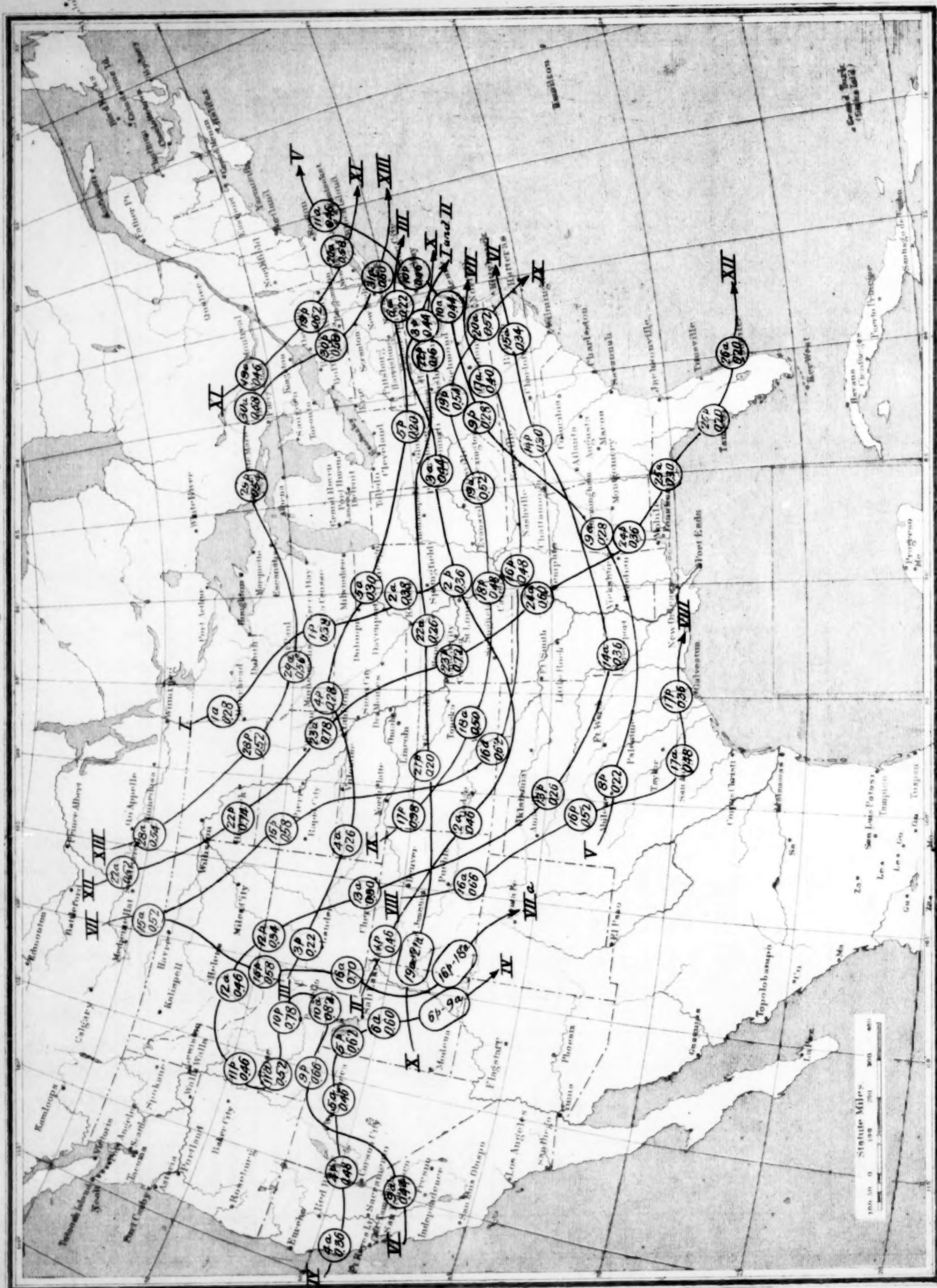


Chart III. Tracks of Centers of Low Areas, January, 1908.

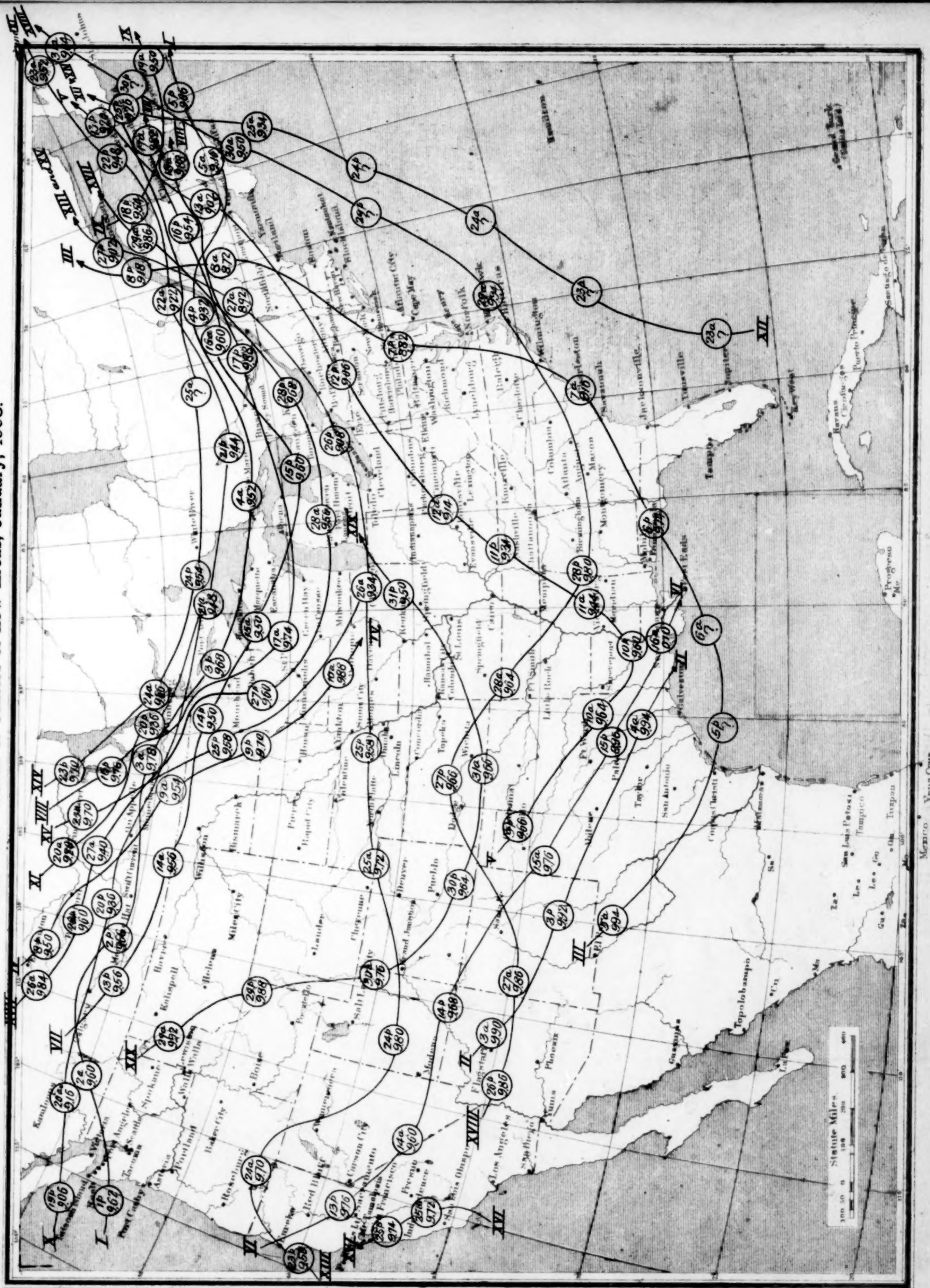
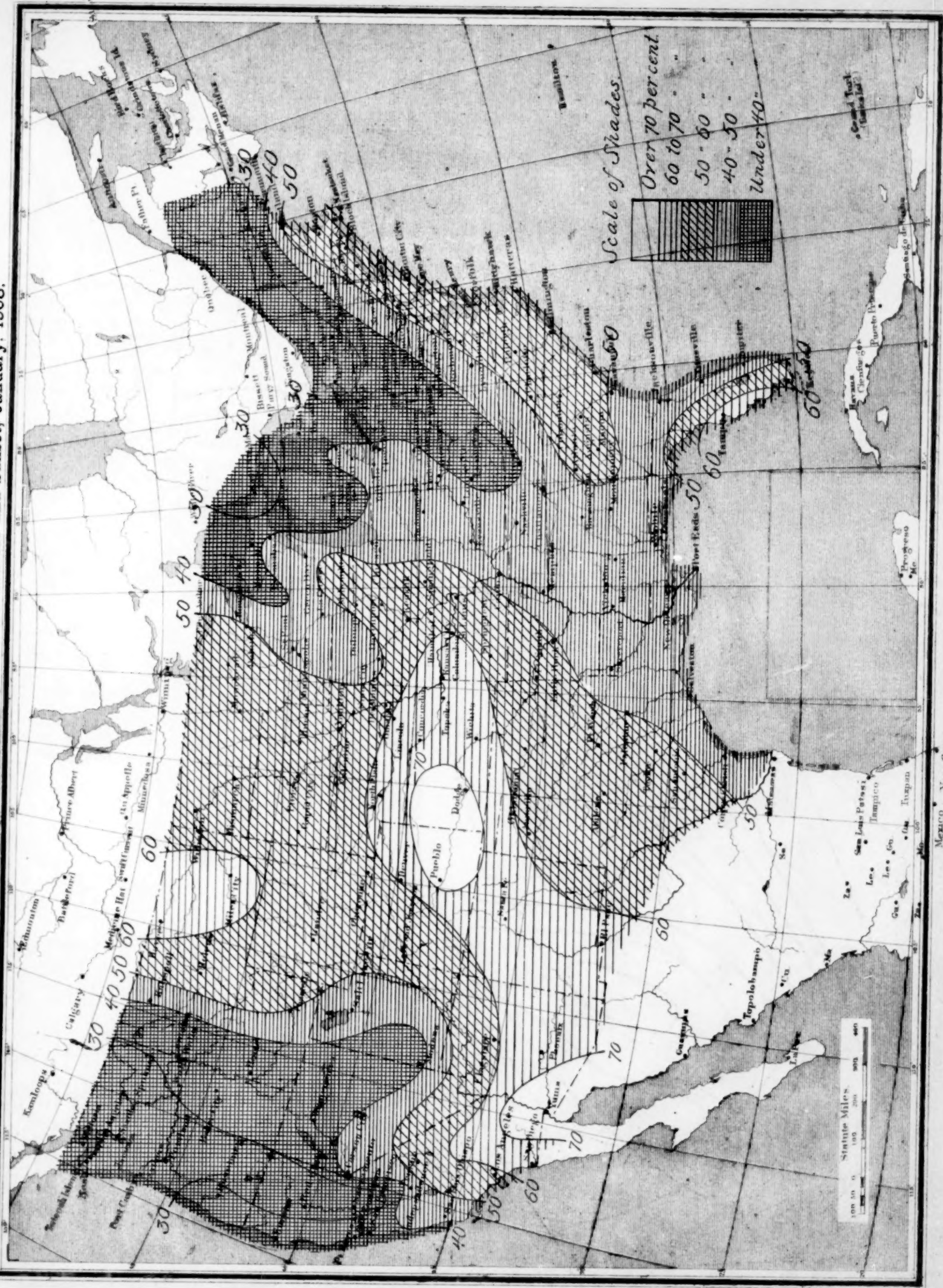


Chart IV. Total Precipitation, January, 1908.



• Bankerville Chart V. Percentage of Clear Sky between Sunrise and Sunset, January, 1908.



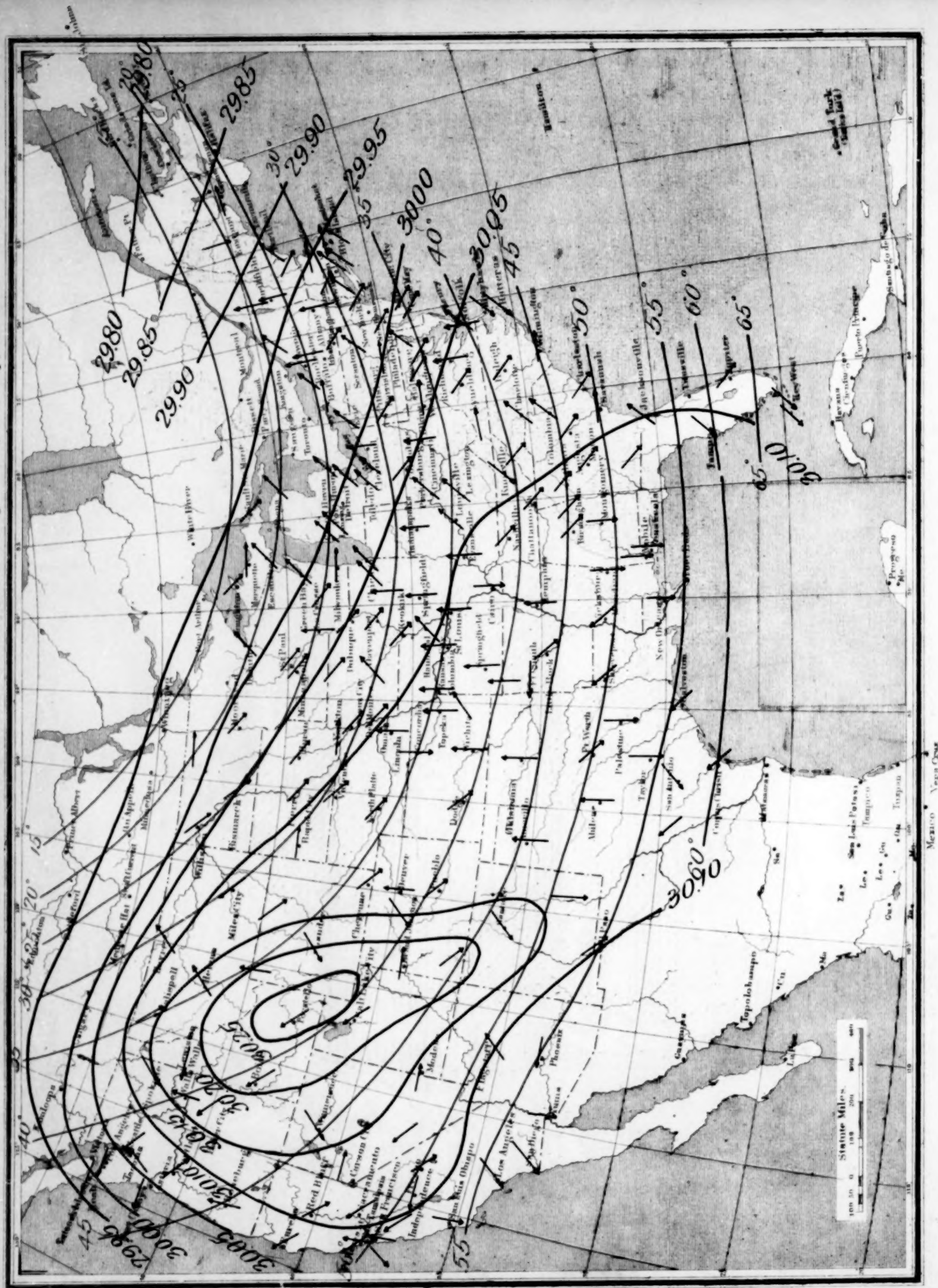


Chart VII. Total Snowfall for January, 1908.

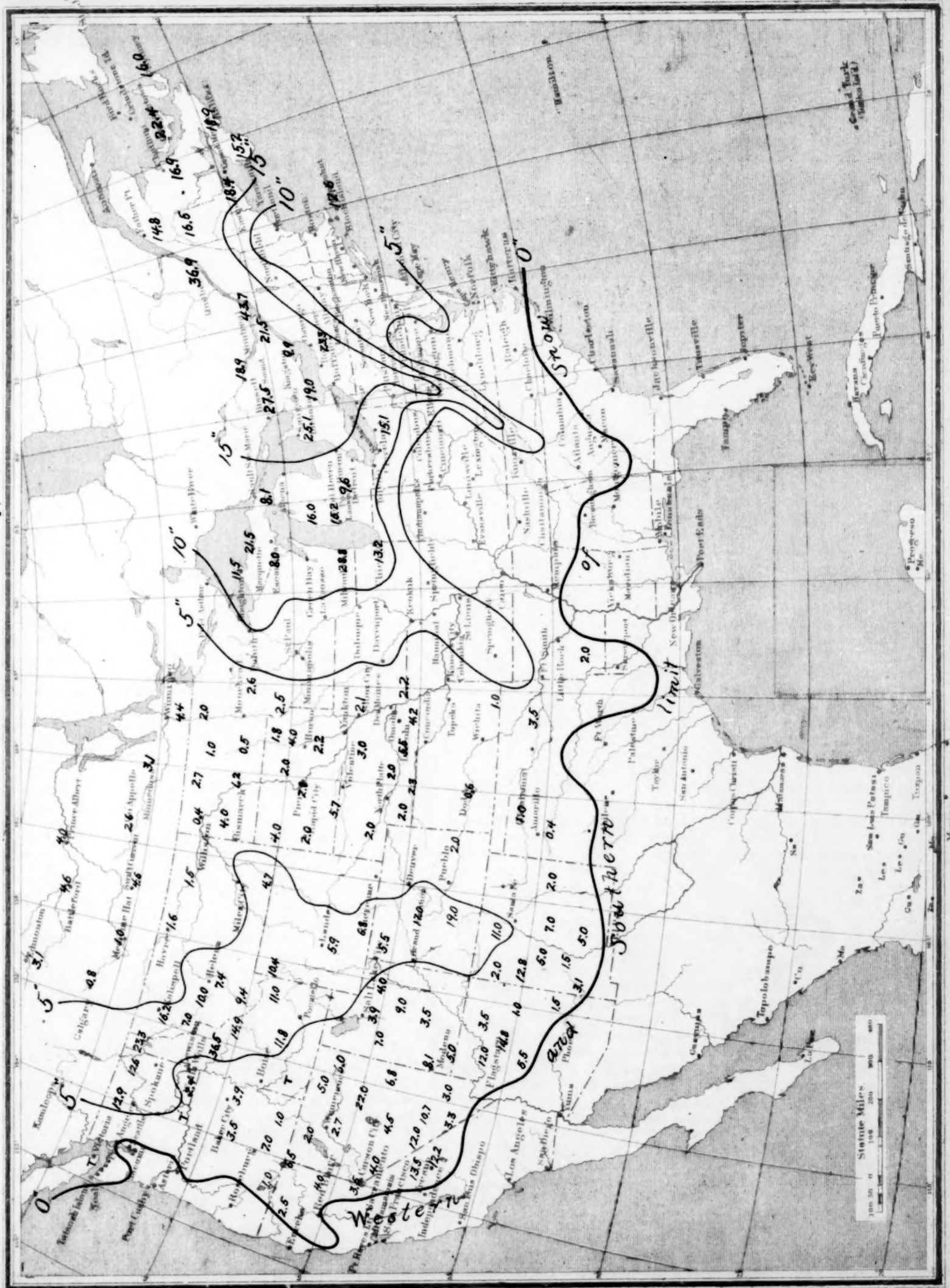


Chart VIII. Depth of Snow on Ground, January 31, 1908.

